THE MIRACLE
PIANO TEACHING SYSTEM

USER'S GUIDE

The Miracle Piano Teaching System

For the
Nintendo Entertainment System

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Getting Started

Welcome to the Miracle Piano Teaching System!

You are about to take a complete beginner's piano course. In the months to come, your Nintendo Entertainment System (NES) will provide hundreds of lessons to teach you every aspect of playing piano.

These lessons will be tailored to your individual needs. The Miracle *listens* to your playing, identifies problem areas, and provides special exercises to overcome them.

In the process, you'll play many different types of music, including Classical, Jazz, and Rock & Roll.

How Long Does the Course Take?

People learn at different rates.

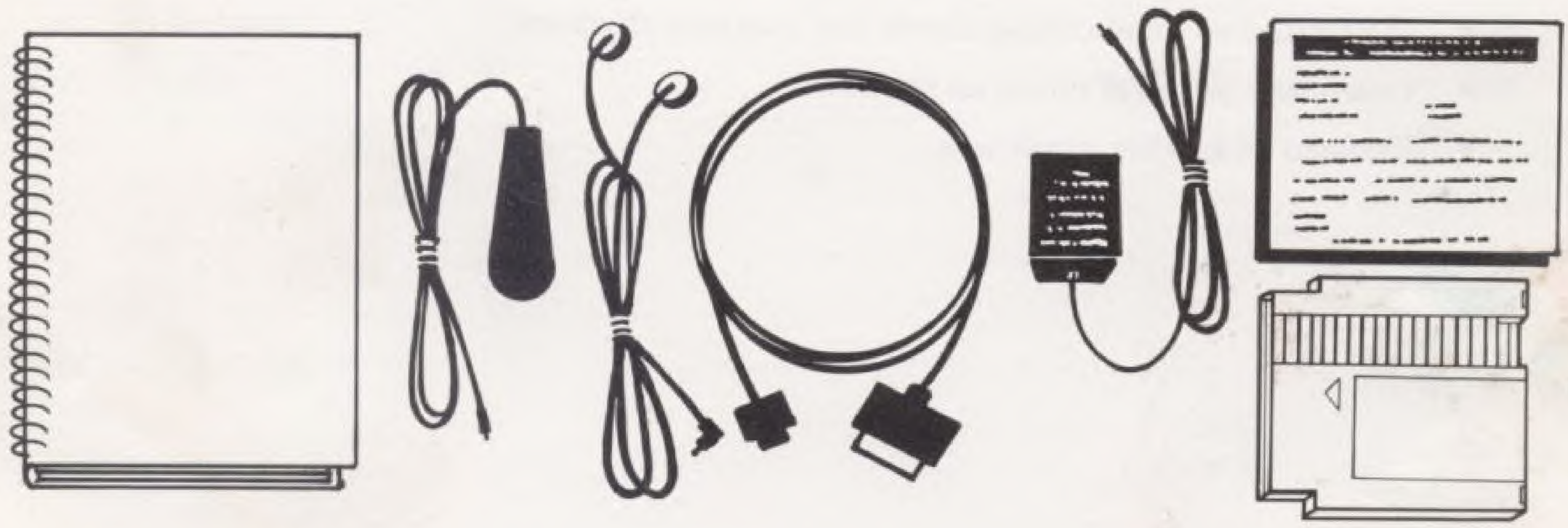
An average student with no prior musical knowledge should complete the course in six to twelve months. After that time, you will be able to:

- Read music notation
- Play with two hands using chords and common rhythms
- Learn new pieces of music on your own
- Perform with other musicians

What's In the Package

Your Miracle Piano Teaching System package consists of the following:

- The Miracle Keyboard
- Keyboard Overlay
- Foot Pedal
- Earphones
- Keyboard Power Supply
- Miracle Cable (for connecting the Keyboard to your NES)
- The Miracle Cartridge
- This Manual
- Warranty Registration Card



Contents of the Miracle Box

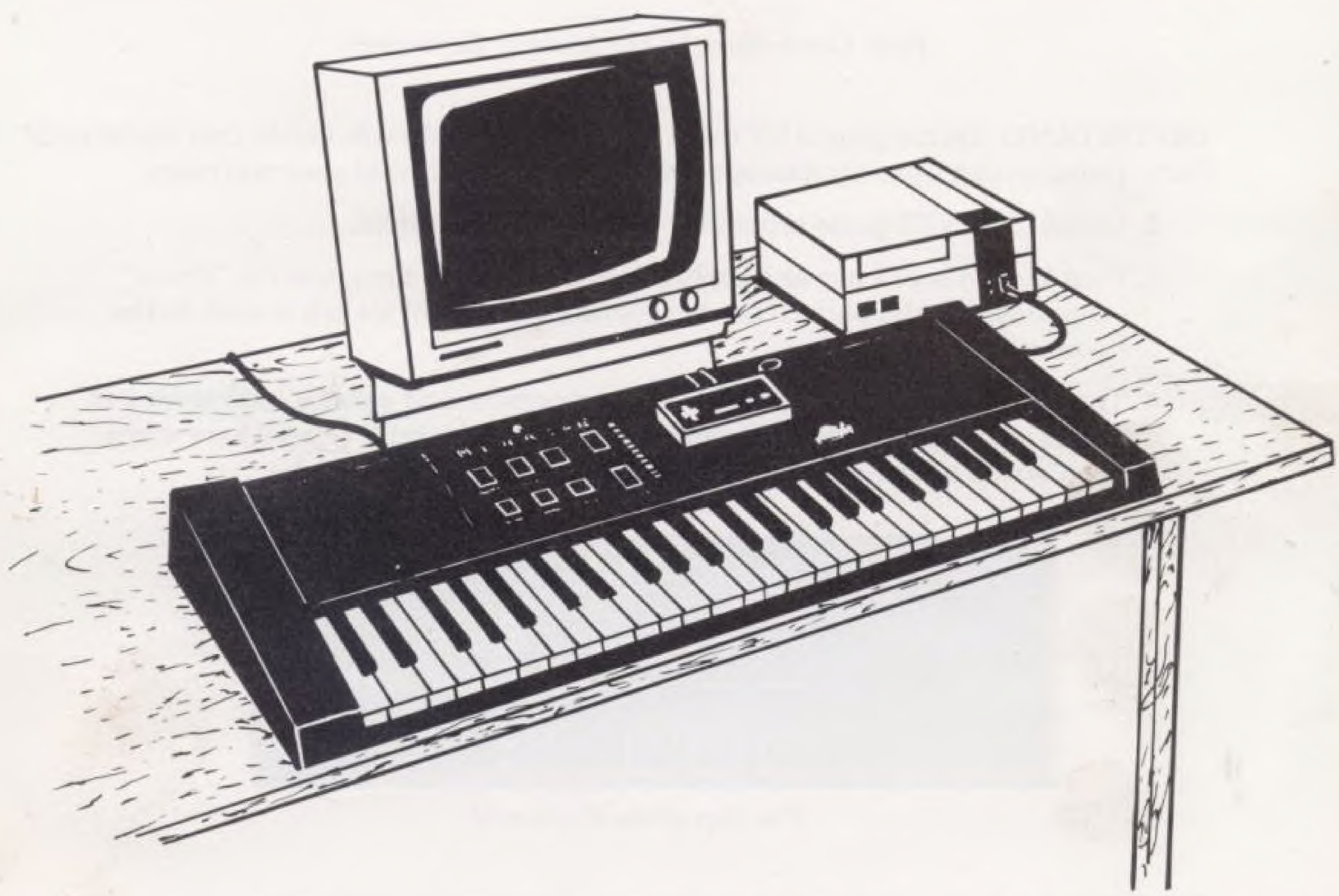
Please fill out and mail your warranty registration card right away.

Where to Set Up the Miracle

Ideally, locate the keyboard (and the NES) where you can sit comfortably with your feet on the floor, and with the TV directly in front of you. The TV should not be higher, lower, or off to the side. There should be enough counter space for this manual.

A desk is a good place. Other good places include card tables and keyboard stands. The kitchen table works too, although you may need to sit on a phone book or pillow so your arms are at the right height. Avoid the living room coffee table if possible. It will give you backaches, and your feet can't rest flat on the floor.

No matter what table you use, position the Miracle keyboard at the edge nearest you. That way, you don't have to stretch to reach the keys.



Where to Position the Keyboard

Connecting the Miracle

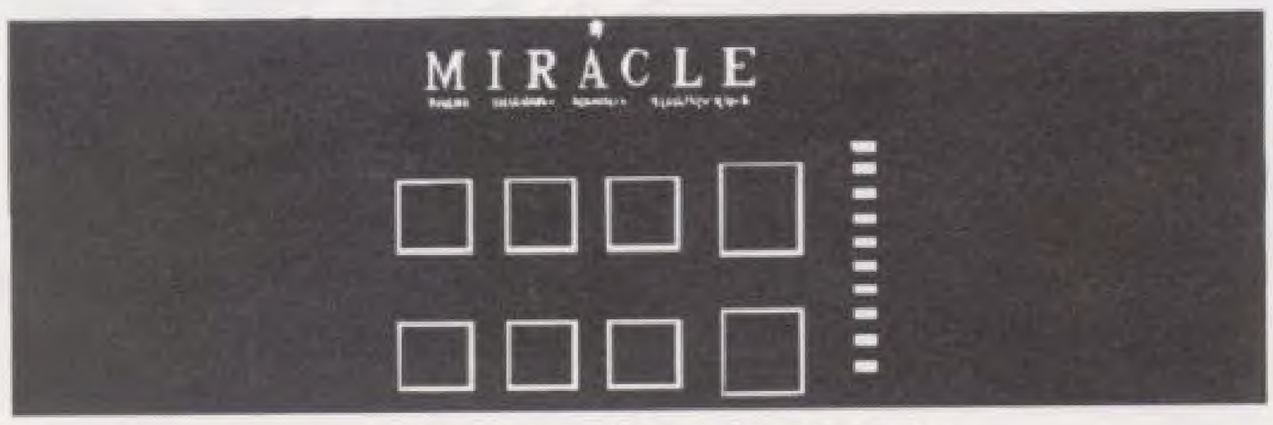
Once you've found a place for the Miracle keyboard, setting it up is easy:

1. Plug the wide connector on the Miracle cable into the "Miracle Port" on the back of the keyboard. Plug the other end into Controller Port #1 on the NES. Don't use the #2 Port. It won't work.

Rear Connectors on the Miracle Keyboard

IMPORTANT: Do not plug *ANY* cable other than the Miracle Cable into the Miracle Port. Doing so can severely damage the Miracle and will void your warranty.

2. Connect an NES game controller to Port #2 on the NES.
3. Plug the keyboard power supply into the wall, and then into the "Power" connector on the back of the keyboard. The On/Off switch is next to the power connector.
4. Turn the Miracle keyboard on. The instrument and volume indicators will light up. Make sure that sound comes out of the built-in speakers when you strike a key. Adjust the volume as necessary.



The Top of the Keyboard

The foot pedal is not used until later lessons. Don't worry about connecting it now.

Information about the foot pedal, earphones, audio connectors (for playing the Miracle through your stereo) and MIDI is in a section entitled *About The Keyboard* at the back of this book.

Starting the Program

To start learning with the Miracle, insert the Miracle cartridge into the NES and turn on the power. Press the "SELECT" button to get past the title screens.

Getting the Most from Your Miracle

With a little bit of patience, dedication, and regular practice, you'll soon be playing piano. The Miracle helps you every step of the way, providing Lessons that make learning and practicing fun. To get the most out of these Lessons:

- Practice a little *every* day. You don't need to spend hours and hours. 45 minutes to an hour is ideal. Even 15 minutes of practice is better than none at all. You'll learn to play sooner by practicing regularly.
- At first, you'll feel like doing as many Sections as you can before you get bored or tired. That's okay, but you will learn sooner if you completely master the Lessons of one Section before proceeding on to the next. To do so, try using the Miracle like this:
  1. Complete a Section.
  2. Go to the *Practice Room* and play all of the pieces from that Section until you can do them really well. (You'll learn about the Practice Room later.)
  3. Redo the Section, just to make sure you've got it right. If you've practiced enough, the second time through won't take long at all!
  4. Go on to the next Section.
- There may be times when you can't seem to get through a Lesson, and begin to think "I'll never get this!" This happens to everybody, and usually means that it's time to give your mind a rest. Play some music you already know, play another NES game, or get away from your NES entirely. Remember, if you don't get it now, you *will* get it eventually: an hour from now, tomorrow, or next week.
- Use the Practice Room. It is often easier (and less frustrating) to work on the more challenging pieces there than it is to repeat Lessons. With all of the Miracle's Activities available, you can practice in a wide variety of ways. For example, if you're having trouble with the right hand notes in *La Bamba*, select *Right Hand* practice and work in either the *Shooting Gallery* or *Practice Notes*. If you're having trouble coordinating both hands in *Star Wars*, select *Both Hands* practice and work in *Practice Rhythms* or with *Roboman*.

  The Practice Room also contains many pieces not used in the Lessons. To learn any piece by using *only* the Practice Room, first learn the left hand rhythms, then learn the left hand notes, and then play the entire left hand part with the *Toolworks Orchestra*. Next, repeat this three-step procedure with your right hand, and then repeat it again with both hands.
- When learning rhythms, use *Roboman* at first. As you get better, switch over to *Practice Rhythms*. If you make too many mistakes and want to start again, press the "B" button on the NES Controller. You might also try listening to the rhythm of the piece by selecting *Demonstrate the Piece*.

- When learning pitches, use the *Shooting Gallery* at first. When you can hit most of the ducks with the first shot, switch over to *Practice Pitches*. Take all the time you need, but try to keep in mind the rhythms you already learned.
- If you have trouble when using the *Toolwooks Orchestra*, don't be afraid to take a few minutes to go back to *Practice Pitches* or *Practice Rhythms*.
- In the later part of the course, expect to find Sections that take a week or more to get through. These Sections are designed to sharpen your skills and are intentionally more challenging. They take time to master, so don't get discouraged. With practice, you'll get it!
- Read this book as you go along. It contains a description of each lesson, with hints on how to work around problems. It also provides a lot of interesting facts that you won't see on your Nintendo screen.

Special Note to Parents

The Miracle Piano Teaching System works well with children age eight and up. Pre-teens, however, may need help reading the lessons, or learning how to position their fingers over the keys.

This is an excellent opportunity for you to get involved with your child's Nintendo play. If you don't already know how to play piano, you might enjoy taking the course along with your child. You'll find it especially rewarding for the two of you to learn a creative skill together.

Your child will progress fastest when practicing is viewed as a fun thing to do. The best way to encourage this attitude is to set a definite time each day for practice, and then show an interest in your child's progress at the end of that time. When your child sees you excited about his or her progress, it inspires your child to make more progress. This works especially well during activities in which the Miracle adds accompaniment to your child's performance.

Special Note to Teachers

The Miracle can enhance your teaching by providing forms of practice that are possible only with a computer (the Nintendo):

- Pointers give a visual *what to play* that builds music reading confidence.
- *Pitch Practice* activities advance pointers to new notes only when the correct pitch is played.
- A properly adjusted metronome continuously reinforces good rhythm.

- *Rhythm Practice* activities play the proper pitches regardless of which key is pressed. This lets the student be an active participant in having the piece *partially* demonstrated.
- The duck game and Roboman make practicing more fun while encouraging development of note reading and rhythm skills.
- Special exercises help students overcome specific problems. These are given as needed, when the Miracle senses trends of errors during a practice session.
- Different display formats provide variety and enable students to concentrate on specific aspects of a piece.
- Practice is constantly varied and fun, so students tend to practice more, and more regularly.

As the teacher, these tools can provide an effective way to speed the progress of your students. This gives you more time to focus on:

- Maintaining good hand position.
- Phrasing and tapering of phrases.
- Rubato or subtleties in the tempo.
- The art of pedaling.

Note that the pedal that connects to the Miracle is a damper pedal (sometimes this pedal is imprecisely called a "sustain" pedal). Its use is introduced briefly in the later Lessons.

For Those With Previous Piano Experience

Players with experience often find the Miracle course an excellent and enjoyable way to refresh their memory and improve their playing skills. However, because the Miracle is designed to teach music to absolute beginners, experienced players will be able to speed through the initial lessons.

We recommend that you complete the first two Sections, to get the feel of how the system works. Then skip ahead as far as you think necessary. Each Section of the course is described later in this book. Use these descriptions to determine where you should start the course.

The interactive nature of the Miracle lets it teach piano using unique, new techniques that only a computer (your Nintendo) can provide. You'll find learning with it quite different from a course presented by traditional instructors, although all of the elements of a traditional course are there.

These elements are sometimes presented in a different order than they are in traditional courses. As a result, you might find an occasional lesson that covers things you already know.

About the Miracle Keyboard

The Miracle keyboard does not need to be connected to the Nintendo to operate. In fact, you'll find it an excellent stand-alone keyboard that offers a wide variety of features:

- 128 different instrument sounds (patches), each fully accessible from the buttons on the top panel.
- Sixteen voices. The Miracle can play sixteen different notes simultaneously, in stereo.
- Velocity sensitive keys. This means that the harder you strike a key, the louder it sounds.
- MIDI support, enabling you to connect the Miracle to a sequencer, computer, or other MIDI compatible device.
- Split keyboard function. The left half of the keyboard can sound like one instrument while the right half sounds like a different one.
- Performance and Library modes, which allow you to play using a combination of the many instruments and sound effects.

To find out how to use these and other features of the Miracle keyboard, see the section entitled *About the Keyboard* at the back of this book.

Using the Software

The Miracle presents music and information to you in a variety of ways, ranging from standard sheet music to arcade games. This section identifies each of the different types of screens, and explains their use.

Welcome Screen

When you turn on your Miracle, this is the screen that you see after the titles. From it, you tell the Miracle your age and set the Section of Lessons you want to work with.

The Welcome Screen

Telling the Miracle Your Age

The Miracle offers slightly different training for children than it does for adults. The material covered is the same, but the text of "Child" format is easier to read.

Teenagers should press "B" to select the adult text. Pre-teens should press "A". The mode you select is highlighted with a yellow dot.

Choosing a Section

The Lessons in the course are broken down into 36 Sections. As you begin each day's practice, you will want to go back to the Section where you left off.

The Section where the Miracle will start appears in yellow on the Welcome screen, at the lower-left of the arrow keys.

To select a different Section, press the "UP" and "DOWN" arrow keys. Then press "START" to begin.

The Chalkboard

Chalkboard screens explain what to do in each Lesson. They also provide interesting trivia related to the material in that Lesson, and talk about your progress.

After reading a chalkboard, you'll press a button on your NES game controller to continue. Available functions appear at the bottom of the screen. These functions are:

A Begin the Activity for this Lesson

B Go back to the previous Lesson

SELECT Go to the Options Screen. This screen lets you jump between Lessons, hear the music for the current Lesson, or go to the practice room. The Options Screen is described further below.

The Section and Lesson number appears at the bottom right corner of the Chalkboard. When you have finished for the day, this number lets you know where you stopped. Use it to return to that Section the next time you use the Miracle.

Note: If you have difficulty completing a Lesson, the Miracle provides Chalkboards and exercises to help you overcome your problem. These "Oops" Chalkboards do not have Section and Lesson numbers.

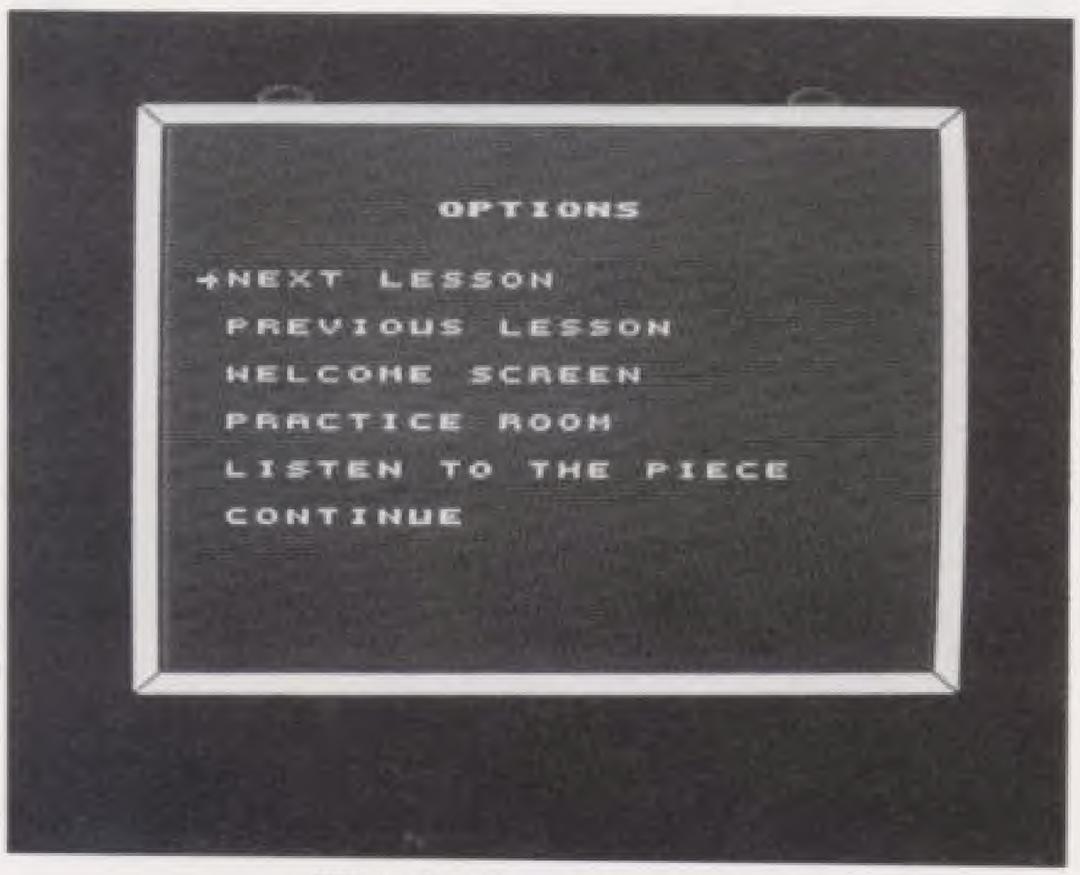
The Chalkboard

Options Screen

This screen appears when you press "SELECT" from a Chalkboard screen. It provides the following options:

NEXT LESSON	Jump ahead to the next Lesson.
PREVIOUS LESSON	Redo the previous Lesson.
WELCOME SCREEN	Go to the Welcome screen to change the Section number or enter your age.
PRACTICE ROOM	Go to the Practice Room.
LISTEN TO THE PIECE	Listen while the Miracle demonstrates the piece that you're learning to play. After the demonstration, you automatically return to the Lesson.
CONTINUE	Return to the Lesson where you left off.

Move the yellow arrow to your selection using the "UP" and "DOWN" arrow keys. Then press "A" to go to that selection.



The Options Screen

Activities

The Lessons employ eight different types of Activities:

- Finger Numbers/Note Names
- Pitch Practice
- Steady Quarters
- The Shooting Gallery
- Rhythm Practice
- Roboman
- Sheet Music
- Flashcards

During all Activities *except* Flashcards, your NES Controller provides the following options:

B	Restarts the Activity at the beginning.
START	Pauses the Activity. Press *Start* again to resume.
SELECT	Returns you to the Chalkboard for the Lesson.

The Flashcards Activity has special NES Controller options, described below in the section on Flashcards.

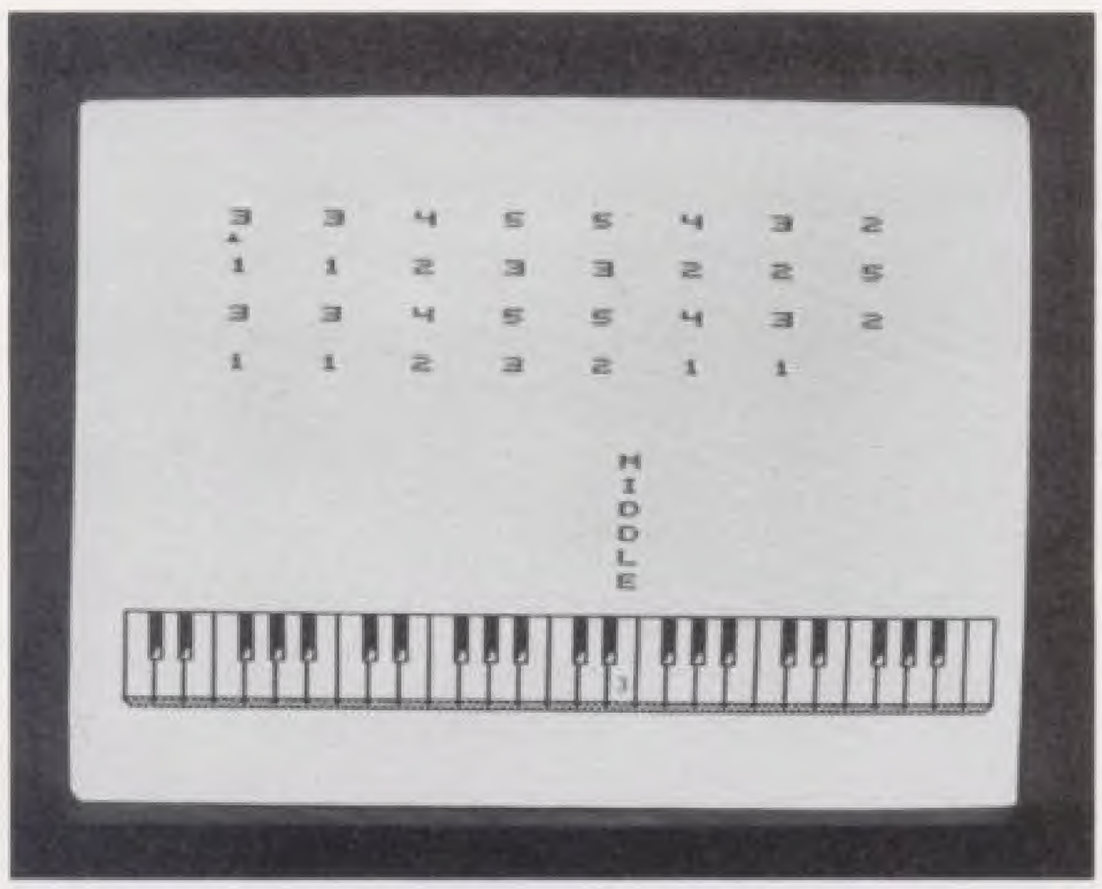
Finger Numbers/Note Names

This Activity allows you to play without knowing how to read music. It is used only in the early Lessons, before musical notation is introduced.

The green arrow indicates which note to play. A blue "X" under a note means that you played that note incorrectly.

The on-screen keyboard matches the action of the Miracle keyboard. When you press a key, the same key on the on-screen keyboard also appears to be pressed down.

In some Lessons, finger numbers (and occasionally finger names) appear on the keys of the on-screen keyboard.



Finger Numbers & Note Names

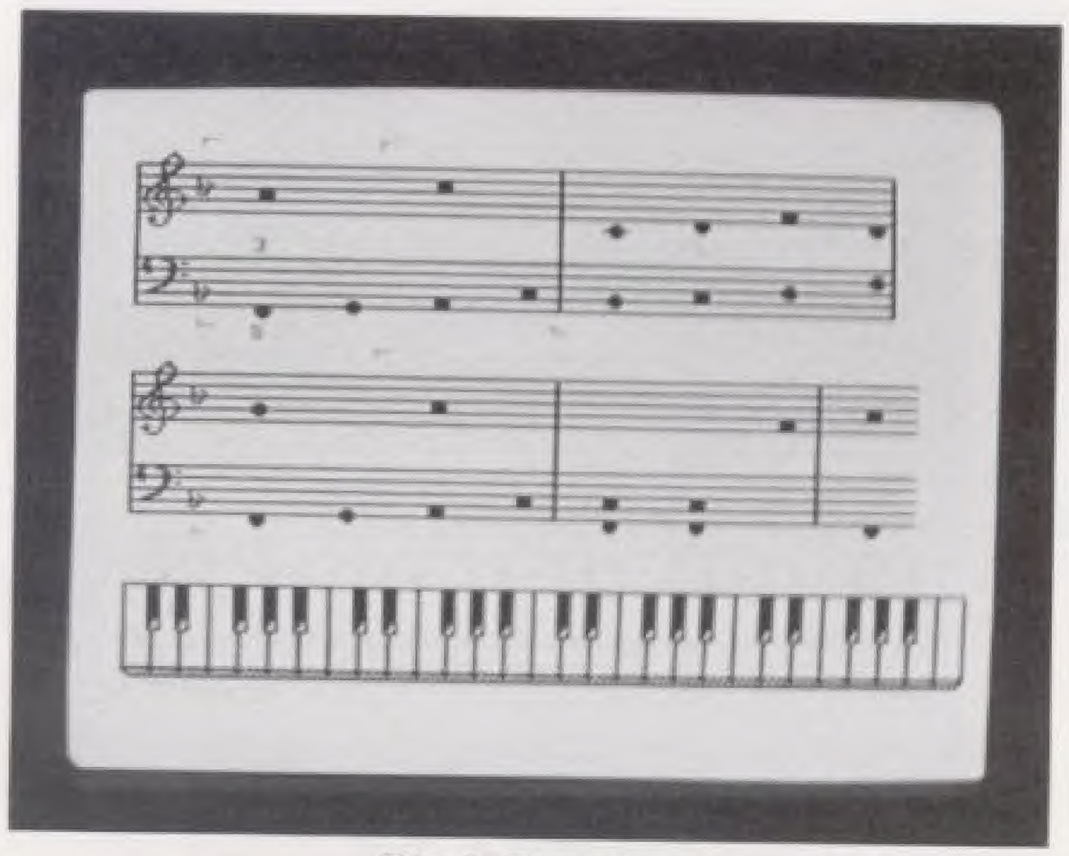
Pitch Practice

This Activity teaches the notes and fingering of a piece of music. You'll also use it to familiarize yourself with the hand position changes required to play the piece.

Because the purpose of this Activity is to concentrate on playing the correct notes and fingering, no set rhythm for the piece is provided. All notes appear on the staff as black circles.

A green finger number appears under the note you must play. This finger number does not advance until you play the correct note.

Grey brackets indicate points in the piece that require a different hand position.



Pitch Practice

Steady Quarters

This Activity is identical to *Pitch Practice* except that the metronome is turned on. This is to provide practice in making smooth transitions from one hand position to another.

During this Activity, play one note per beat.

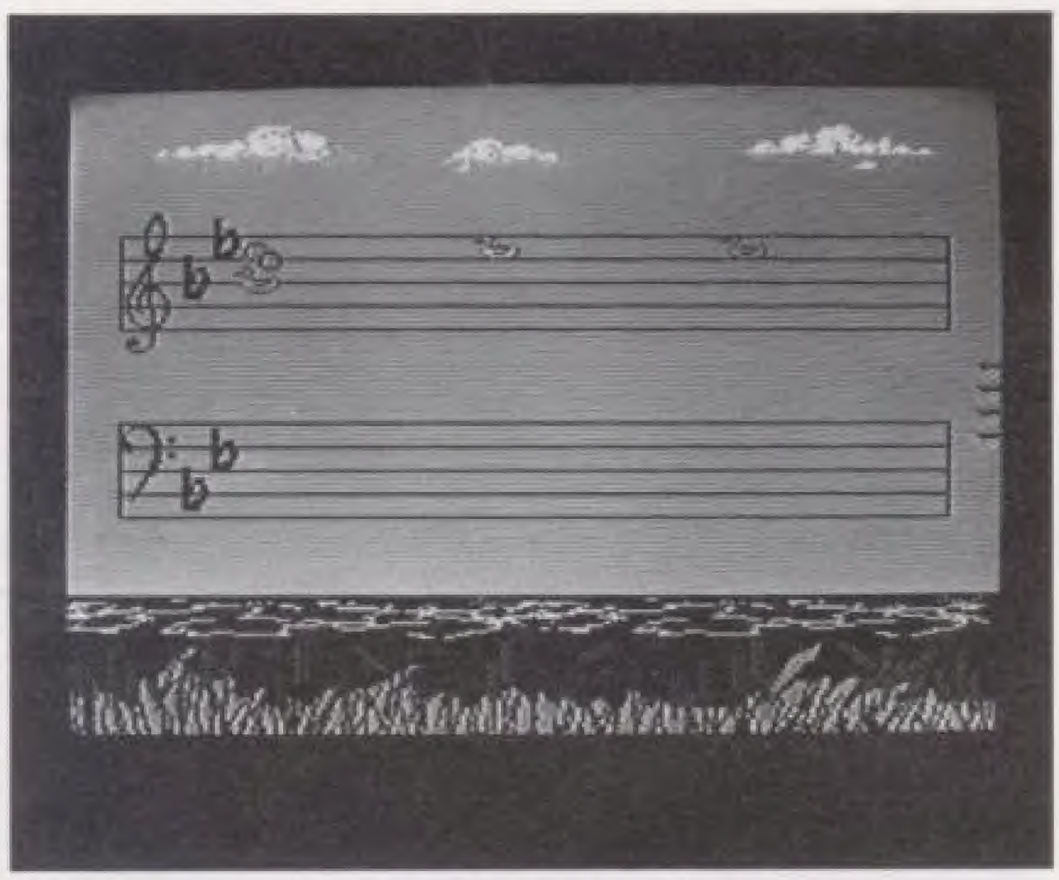
The Shooting Gallery

This Activity is an arcade-style game that helps you associate keys on the keyboard with notes on the staff.

Ducks swim across the lines and spaces of the staff from right to left. Armed with green tomatoes, you must hit each duck by playing the note that it swims across. If you press the correct key, the duck quacks and disappears. If you miss, the tomato splats against the scale on the note you played.

The number of throws per duck varies from Lesson to Lesson. That number is displayed as a stack of tomatoes at the right side of the screen.

Note: No matter how many ducks appear on the screen, your tomatoes can only hit the duck that is farthest to the left.



The Shooting Gallery

Rhythm Practice

This Activity is exclusively for practicing rhythms. In it, you tap out rhythms using only one key, concentrating on *when* and for *how long* you press that key.

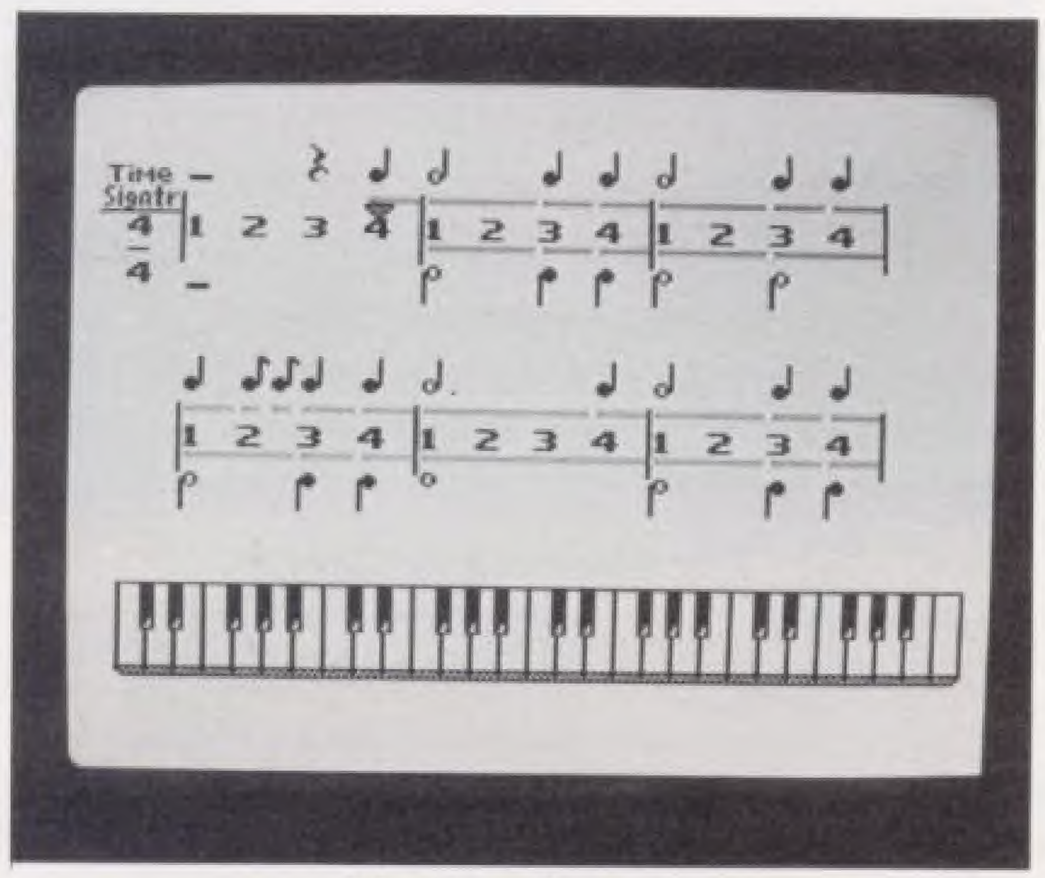
Any single note on the Miracle keyboard may be used with this Activity. However, once selected, strike only that one key to tap out the rhythm.

When tapping out a rhythm to a two-handed piece, select a key on the left half of the keyboard for your left hand, and on the right half of the keyboard for your right hand.

The large numbers on the Rhythm Practice screen represent beats (ticks of the metronome). In some Lessons, smaller numbers appear between the larger numbers. They represent subdivisions of each beat.

The yellow arrow moves one beat at a time. Since there may be more than one note per beat, this is not necessarily the same as one note at a time.

The amount of time that you hold each note is indicated by a blue line, a note of a specific time value, or both. Notes and lines that appear above the beat numbers are played with the right hand. Notes and lines that appear below the numbers are played with the left hand.



Rhythm Practice

Roboman

This Activity teaches you the concepts of rhythm.

The screen is divided into two sections. The bottom part of the screen works exactly like the Rhythm mode screen, except that a blue vertical line replaces the yellow arrow.

The rest of the screen shows you Roboman: a robot in a piano factory.

To move through the factory, Roboman must build bridge segments under his treads. Otherwise, Roboman crashes to the floor and must start back at the beginning of the measure in which he fell. After three falls, he is sent off to the junk heap and the game ends.

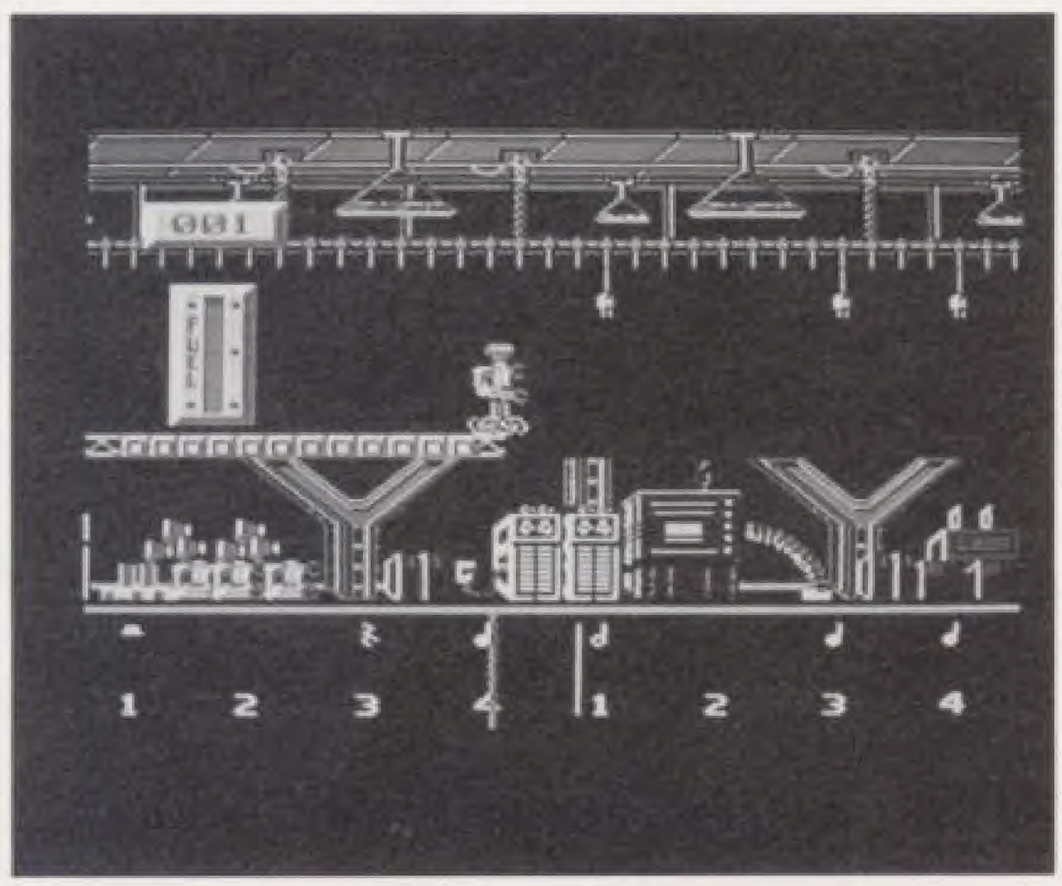
Roboman builds bridge segments as long as a key is held down on the Miracle keyboard. As he builds, however, he uses up fuel.

To replenish this fuel, you must make Roboman grab the power plugs that dangle from the ceiling. Do this by striking a key as Roboman passes under a power plug.

A fuel gauge appears at the left side of the screen. When Roboman has a full tank, the gauge is blue. As fuel is used, however, the gauge starts turning red. When completely red, Roboman is out of fuel. He falls apart and the game is over.

Note: When Roboman starts up again after falling off a bridge, his fuel is *not* replenished.

The counter above the fuel gauge has two functions. At the beginning of each run, it displays the number of chances Roboman has left to make it through the factory. During the run, it displays the number of power plugs Roboman has grabbed.



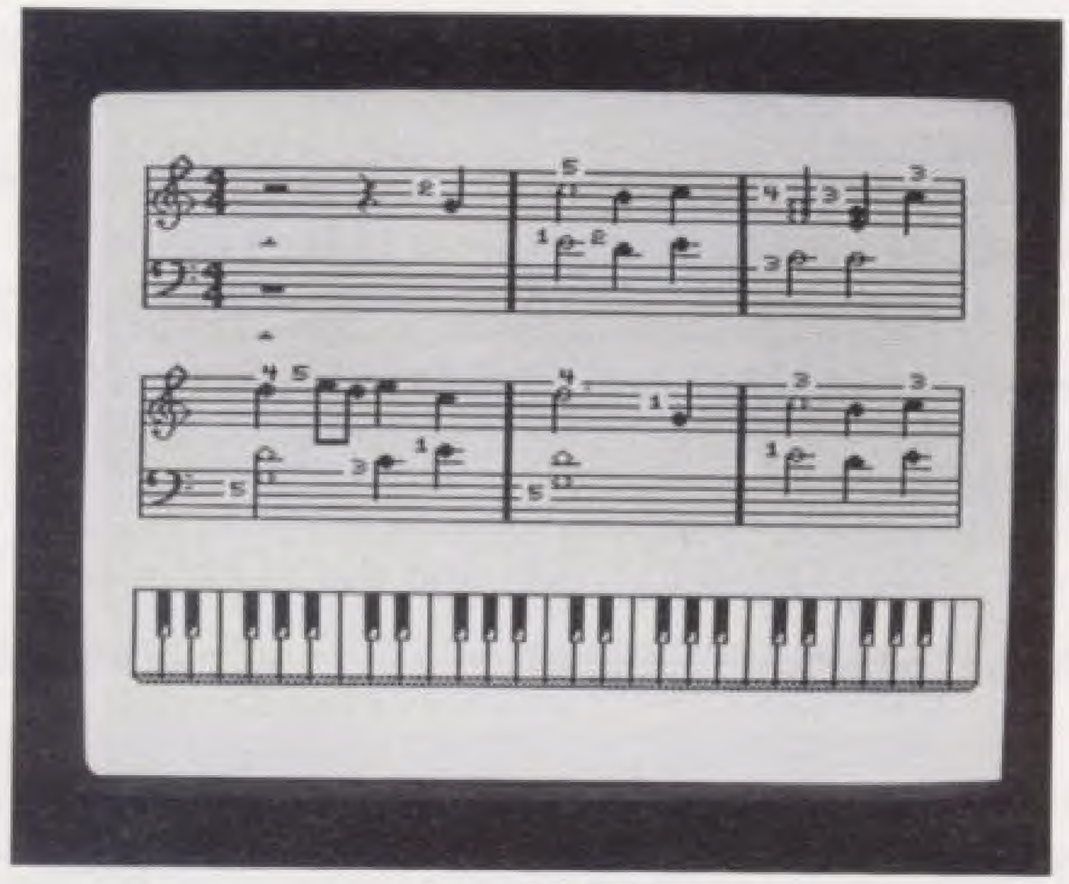
Roboman

Sheet Music

This Activity presents music to you exactly as it would appear in sheet music. *Sheet Music* Lessons teach you to combine pitch and rhythm.

Green arrows indicate which note(s) you should play.

As you play, the on-screen keyboard shows you which keys you've pressed.



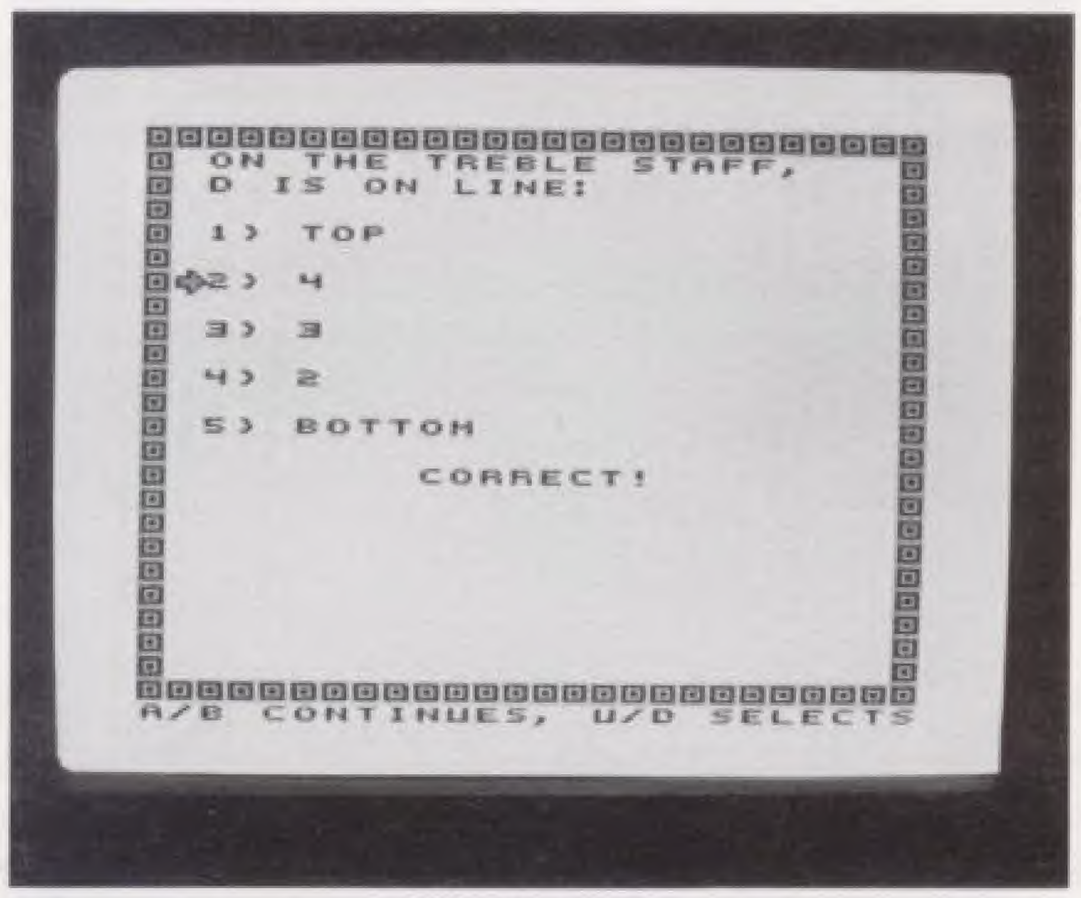
Sheet Music

Flashcards

Flashcards test your understanding of what you've learned. All questions are multiple choice.

Use the up and down keys on your NES controller to move the on-screen arrow to your guess. Then press the "A" button.

If you guess wrong, use the up and down keys to try a different answer. When you guess right, press the "A" button to move on to the next question.



Flashcards

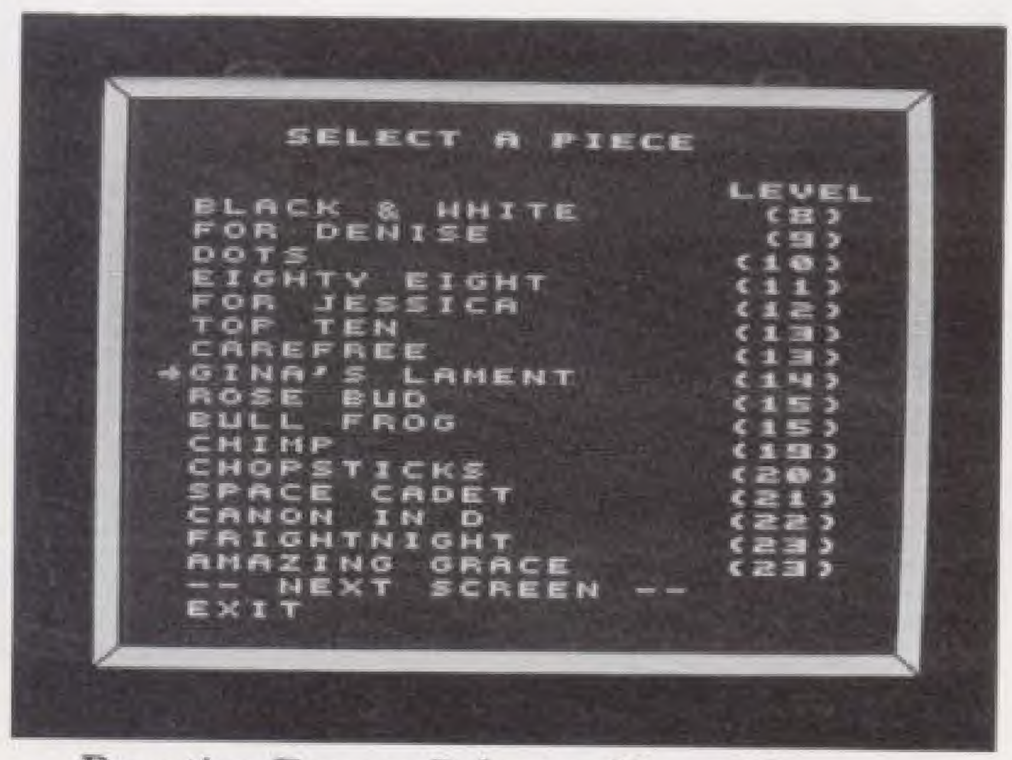
The Practice Room

In the Practice Room you can practice any piece of music in the course, using the different Miracle Activities. It's a good idea to visit here often. Practice sharpens your skills so that you can tackle more advanced Lessons.

You get to the Practice Room from the Options Screen.

Select a Piece

When you enter the Practice Room, you'll first see one of three *SELECT A PIECE* screens:



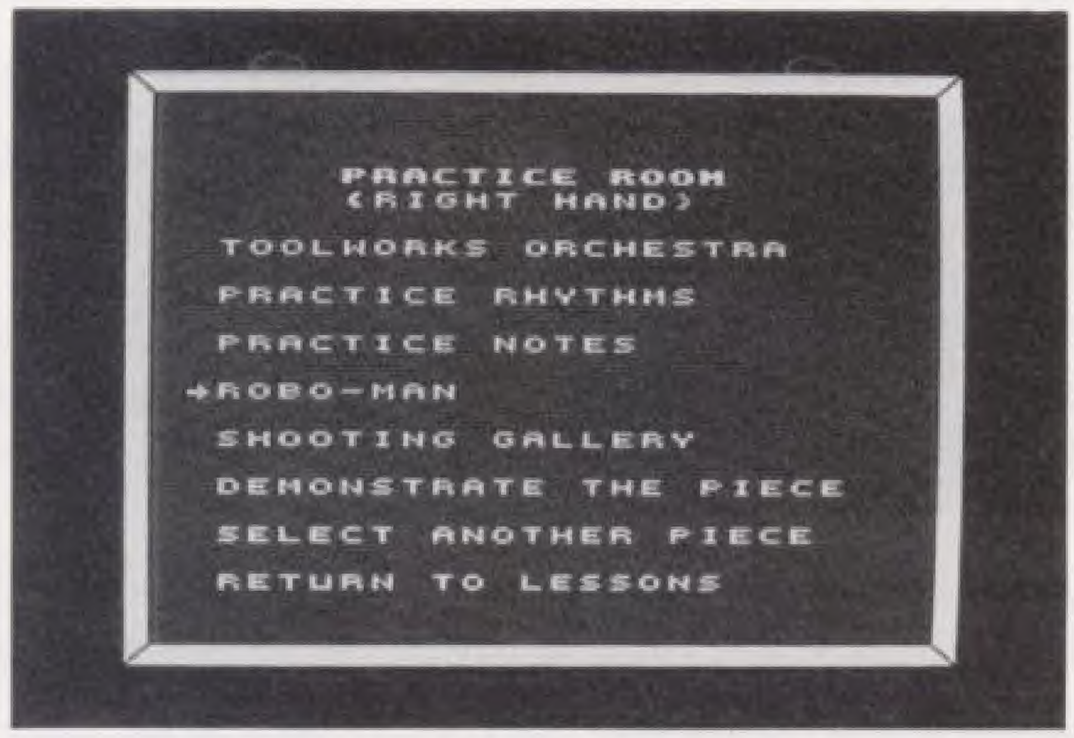
Practice Room: Select a Piece Menu

The *Level* number next to each piece is the Section in which the piece is introduced.

Using the "UP" and "DOWN" arrows on the NES Controller, position the yellow arrow next to the piece you want to practice, or beside "— NEXT SCREEN —" to see a different menu of choices. Then press the "A" button to go to your selection.

Selecting "EXIT" and pressing "A" returns you to the Lessons.

After selecting a piece, the *PRACTICE ROOM* menu appears.



Practice Room: Main Menu

Hand Indicator

The line below the words "PRACTICE ROOM" indicates the hand with which you will practice. If the piece you selected was from a Lesson in which you used only your right hand, this line says "(RIGHT HAND)". Likewise, if the piece was from a left-handed Lesson, the line says "(LEFT HAND)". If the piece was from a Lesson that worked with both hands, however, you may choose to practice with your left *or* right hand, or both.

Use the "SELECT" button to choose which hand to practice with.

Toolworks Orchestra / Solo Performance

The name and function of the first selection on the Practice Room menu changes depending upon the piece of music you've chosen.

TOOLWORKS ORCHESTRA appears when the piece is available with full accompaniment. This gives you practice playing with others.

SOLO PERFORMANCE appears when the piece is played in the Lesson without accompaniment. If the Miracle played one hand for you in the Lesson, it will also do it here.

The Activity used also depends upon which piece is selected. *Finger Numbers / Note Names* is used with pieces from Sections 1 to 4. All other pieces are presented using *Sheet Music.*

Other Activities

You may also practice only the rhythm or only the notes of a piece by selecting one of the other Activities to work in. *PRACTICE RHYTHMS* selects *Rhythm Practice. PRACTICE NOTES* selects *Pitch Practice. Steady Quarters* is not available in the Practice Room.

You may also choose ROBO-MAN, SHOOTING GALLERY, or DEMONSTRATE THE PIECE.

Demonstration Mode

If you don't press an NES Controller button at the title screen, the system goes into Demonstration mode. In this mode, the Miracle plays various pieces from the course while displaying the different Activities. The word "Demo" appears in blue at the bottom of the screen.

You may also enter this mode from the *Practice Room* to demonstrate a specific piece. To do this, select *DEMONSTRATE THE PIECE* from the Practice Room menu.

To exit Demonstration mode, press the "SELECT" button on your NES Controller.

Quick Reference to Common Commands

The following are the NES Controller commands that you'll use most frequently:

To Perform This Function	Press These Buttons
Restart the Activity	B
Return to Chalkboard from an Activity	SELECT
Skip to the next Lesson from Chalkboard	SELECT, A
Go to the previous Lesson from Chalkboard	B

Section 1
Starting With The Basics

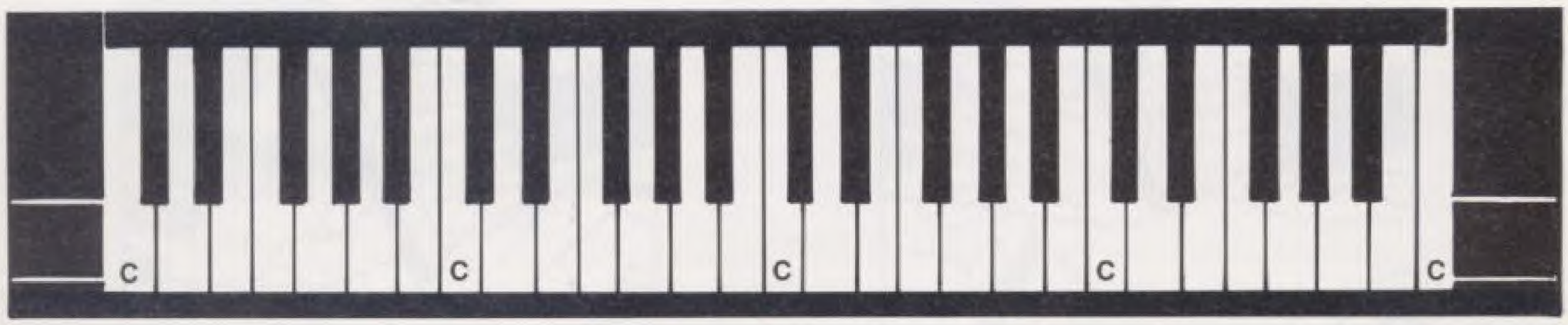
What You'll Discover

Section 1 contains your first twelve Lessons. In these Lessons, you'll learn:

- What *Middle C* is, and where it is on the keyboard
- What *Finger Numbers* are
- How to hold your hands and fingers when you play
- What *Tempo* is, and how to play *In Tempo*
- What a *Metronome* is, and how to use it to play in Tempo
- What *Lead Beats* are and what they're used for
- How to play part of a Beethoven symphony

Middle C

On every piano keyboard, the black keys come in groups of two and groups of three. The white key to the left of each two-note group plays the musical note *C*. There are five C's on the Miracle keyboard.



The Five C's on the Miracle Keyboard

Middle C is the musical note *C* that is closest to the center of the keyboard.

On the Miracle keyboard, Middle C is the white key at the exact center, located one key to the right of the Volume LED's.

Finger Numbers

A number identifies each finger on your hand:

1 - Thumb
2 - Index Finger
3 - Middle Finger
4 - Ring Finger
5 - Pinky

These *Finger Numbers* show you which finger to use to play a specific note.

In this Section's Lessons, you place each finger on a specific key and keep it there. The finger numbers show you which keys to press to play the music in the Lessons.

Later, you'll use finger numbers to help play more advanced music.

Holding Hands and Fingers

In many sports (such as Baseball, Tennis, or even Bullfighting), you hold yourself in a position or stance so that you are *ready* when something happens. Piano playing has a "ready" position too.

To hold your hands and fingers in the "ready" position:

- Hold your arms so that they hang comfortably at your side.
- Hold your hands so that your wrists are not bent.

Correct

Incorrect

Holding Your Wrists in the Ready Position

- Curl your fingers as if you were holding a tennis ball. Your thumb and index finger should form the letter "C".

Correct

Incorrect

Curling Your Fingers to Form a 'C'

- Your fingers should bend downward toward the keys from your knuckles.

Correct

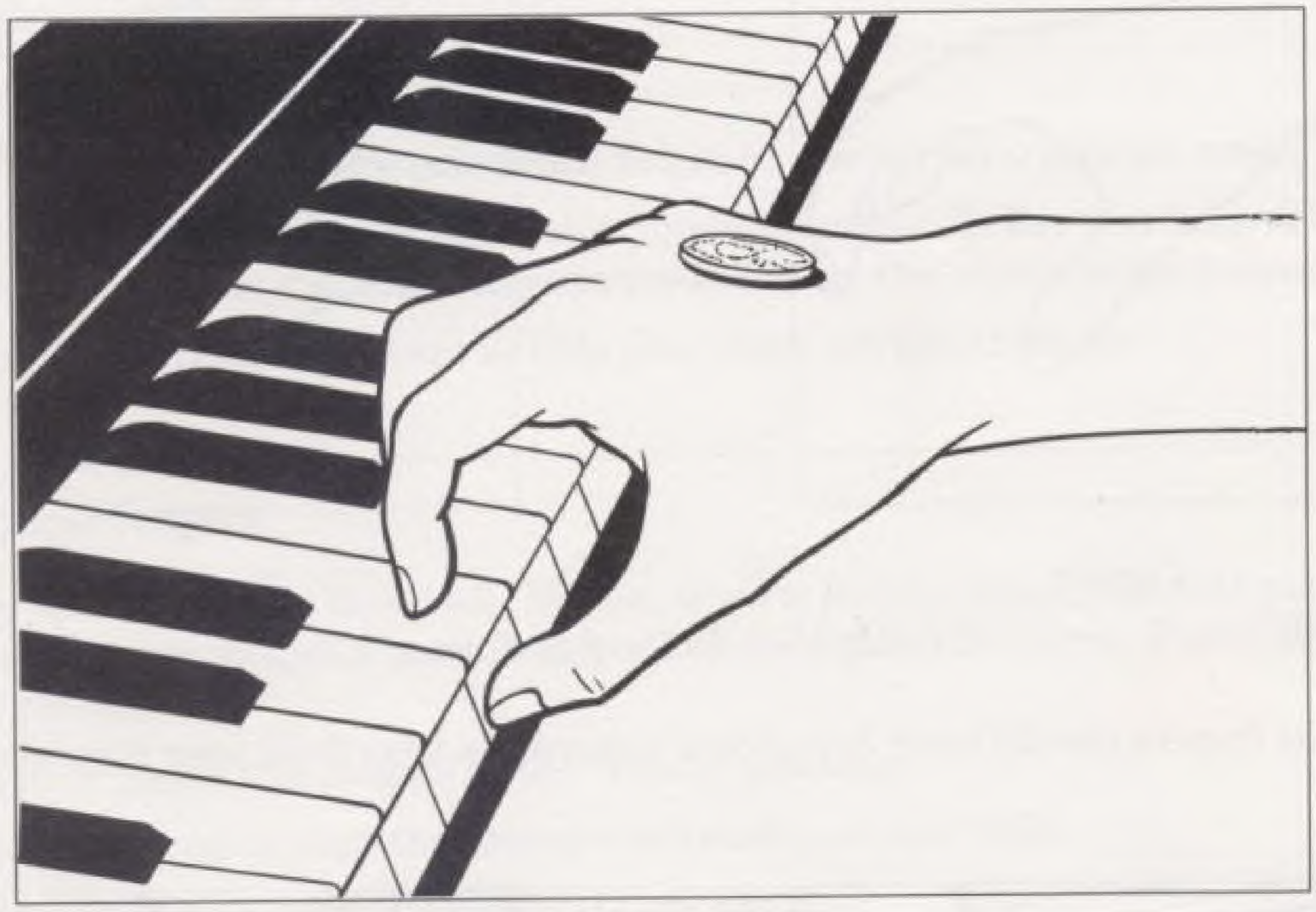
Incorrect

Bending Your Fingers Downward

This *ready* position helps improve your playing by giving you better control with less effort. Do not worry if the ready position seems awkward at first. With practice, the position becomes natural.

As you play, be especially aware of your wrist. It should act as a shock absorber between your hand and your arm. Avoid sudden shifts and twists, and try always to return to a level ready position.

If you have trouble, the *Penny Test* might help. Place a penny on the back of your hand, between the knuckles and the wrist. Then start to play. When you play with proper hand and finger position, the penny won't fall.



The Penny Test

Tempo

Tempo is the speed that you play. To play *in tempo* means to play without accidentally slowing down or speeding up.

With the Miracle, you'll play new pieces at a slow tempo to become familiar with them. As you progress, the Miracle increases the tempo, speeding up your performance.

The Metronome

The *Metronome* is a device that makes evenly spaced tick sounds, which musicians call *beats*. These beats help you keep in tempo.

In many Lessons, the Miracle turns on its built-in metronome to help you keep in tempo.

The first metronome was built in Amsterdam around 1812 by Dietrich Nikolaus Windel. Only five years later, famous composer Ludwig Van Beethoven used metronome markings when publishing his first eight symphonies.

Oddly enough, many of Beethoven's specified tempos are too fast for humans to play. Many conductors today believe that Beethoven used a broken metronome, or that his published markings were wrong.

Lead Beats

Lead (rhymes with *feed*) Beats are the series of ticks you hear on the metronome before you start to play. They provide the tempo to play at, before you begin.

Many Rock songs begin with lead beats, either as drum beats, or as a band member shouting "One, two, three, four..."

Each metronome Lesson in this Section begins with four lead beats. Later, you'll run into music that uses two, three, or even six lead beats.

Ode to Joy

This Section teaches you to play the composition *Ode to Joy*. *Ode to Joy* was originally written as a poem by a man named Joseph Schiller. Beethoven was so moved by the poem that he built his greatest work around it. This work, Beethoven's ninth (and last) symphony, took fifteen years to write, and in its time, was the largest symphony ever written. The full orchestration requires a complete orchestra (which some conductors sometimes *double*), a full choir, and an operatic lead.

Beethoven personally conducted the first performance of his symphony—at a time when he was completely deaf! After it ended, a performer turned Beethoven around to receive a standing ovation.

Section 1 - The Lessons

01.01 WELCOME - Introduces the Chalkboard and the use of the Nintendo Game Controller with the Miracle.

01.02 FINDING MIDDLE C - Introduces *Middle C* on the Miracle Keyboard. Use the on-screen picture of the Miracle keyboard if you have trouble finding Middle C.

01.03 PLAYING BY NUMBERS - Introduces *Finger Numbers*. It's important here to get into the habit of using the correct fingers in one hand position. This habit pays off later when the music becomes more challenging.

01.04 NUMBER PRACTICE - Exercise in playing music with Finger Numbers. As you play, concentrate on the numbers at the top of the screen. Use the on-screen keyboard if you get out of position.

01.05 FINGER SHAPE - A repeat performance of the tune from Lesson 1.04. This time, concentrate on keeping your fingers in the ready position.

01.06 THE METRONOME - Introduces and demonstrates this valuable tool. Notice that the Miracle plays its notes at exactly the same time as the metronome ticks.

NOTE: The metronome plays through the speaker in your television. If you don't hear the metronome clearly, adjust the volume of your TV.

01.07 YOUR TURN - Exercise on playing in time with the metronome ticks. Listen carefully to the four *lead beats* to get the correct tempo (speed). If this Lesson gives you trouble, try doing it *without* looking at the screen. Just use your ears and your own sense of timing to know when to press the keys.

01.08 ROBOMAN - An arcade game to practice keeping in tempo. While the metronome ticks, Roboman rolls down the piano factory corridor. At each tick where Roboman passes under a power plug, press a key to extend him to the plug to get fuel. At the same time, he'll build a bridge that lets him move forward. If you don't press a key in time, Roboman crashes to the floor below.

01.09 FINGER PRACTICE - Another performance of the tune from Lesson 1.04, but now, in time with the metronome. Place your thumb on Middle C and your other fingers on the next four white keys to the right. After the four lead beats, follow the finger numbers at the top of the screen to play.

01.10 YOUR FIRST SONG - Using Finger Numbers, you play *Ode to Joy* from Beethoven's ninth symphony. The metronome is turned off, to let you concentrate on the melody. Practice this Lesson until you have a feel for the notes. Press the "B" button to repeat the Lesson.

01.11 BEETHOVEN PRACTICE - Playing *Ode to Joy* with the metronome turned on. If you know Beethoven's version, you may notice that the Miracle's rhythm is slightly different. If you stumble because of this, try concentrating on the metronome tick. Remember to play one note per tick.

01.12 BEETHOVEN WITH ORCHESTRA - While you play *Ode to Joy*, the Miracle plays along with you. Playing with an orchestra is a lot of fun, but some people find it tricky at first. If you have trouble, try to ignore the accompaniment. Concentrate on playing in time with the metronome ticks.

Section 2
The White Keys

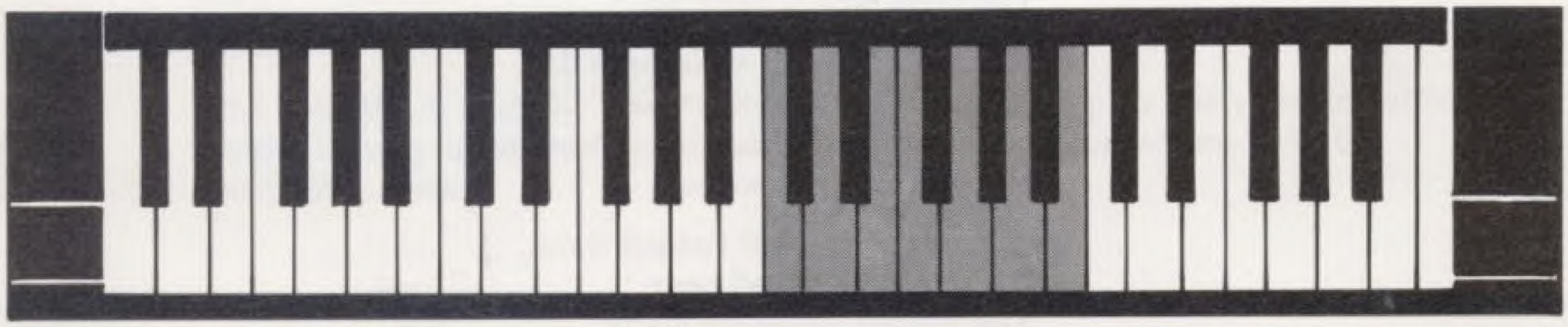
What You'll Discover

Section 2 contains nine Lessons. In these Lessons, you'll learn:

- The note names of the white keys
- How to play by note names

Names of the White Keys

The notes on your keyboard repeat in groups of twelve. Each group uses seven white keys and five black keys.



Keys Repeat in Groups of 12

In each group, the names for the white keys are the first seven letters of the alphabet: A, B, C, D, E, F and G. These names repeat, in order, over the whole keyboard.

The first note on the keyboard is *C*. So is the last. In fact, there are five different *C's* on the Miracle keyboard.

As you know, the one in the middle is called *Middle C*.

Playing by Note Names

Previously, you've played using finger numbers. The Miracle told you which number to play, and you knew which finger to press.

In this section, you'll learn how to play *Mary Had a Little Lamb* using note names. When the Miracle tells you which note to play, you'll know which *key* to press.

Recognizing which notes to play by their names is an important skill: in most music, your fingers rarely stay over the same keys, so finger numbers won't help much.

Knowing the note names is also useful when talking or writing about notes. They are a basic part of the *language* of music.

Mary Had A Little Lamb

First published in 1867 by Sarah Josepha Hale, this song's melody is a combination of the first part and the second melody of a 1853 Barbershop Quartet piece called *Good Night Ladies*.

The first verse of *Mary...* is considered by many to be the best known four line verse in the English language. Few people, however, know all of the verses:

Mary had a little lamb,
With fleece as white as snow,
And everywhere that Mary went,
The lamb was sure to go.

It followed her to school one day,
That was against the rule.
It made the children laugh and play,
To see a lamb at school.

And so the teacher turned it out,
But still it lingered near,
And waited patiently about,
Till Mary did appear.

Why does the lamb love Mary so?
The eager children cry;
Why Mary loves the lamb, you know
The teacher did reply.

Section 2 - The Lessons

02.01 SEVEN WHITE KEYS - Introduces the names of the white keys and has you play every *C* on the keyboard. Remember that a *C* is the key to the left of each group of two black keys.

02.02 LETTER NAME PRACTICE - Introduces a new finger position. Place your thumb on the *A*, two white keys to the left of Middle C.

02.03 PLAYING BY LETTER NAMES - Introduces playing notes by letter name, instead of by finger number. If you need help, the on-screen keyboard still displays the finger numbers.

02.04 REALLY USING LETTERS - A repeat performance of the tune from Lesson 2.03, but this time without the finger numbers. Remember to keep Middle C under your middle finger. If you really get stuck, hit the "B" button and review the last Lesson.

02.05 PLAYING BY LETTER NAMES - Practice with a different hand position.

02.06 PLAYING BY LETTER NAMES - Using letter names to play *Mary Had a Little Lamb.* Don't be surprised if you hear a few extra notes. These extra notes were added so that you can play one note per beat.

02.07 ROBOMAN - Tempo practice to the tune of *Mary Had a Little Lamb.* This time, notice that if you don't hold a key down long enough, Roboman doesn't build a long enough bridge under his treads. If you hold down a key too long, Roboman wastes fuel building bridges on top of other bridges.

02.08 MARY'S METRONOME - Playing *Mary Had a Little Lamb* with the metronome turned on. Concentrate on both the correct notes *and* the correct rhythm.

02.09 THE MIRACLE BAND - The Miracle joins in while you play *Mary Had a Little Lamb.* Be sure to concentrate on playing the proper notes in time with the metronome ticks.

Section 3
The Black Keys

What You'll Discover

Section 3 contains eight Lessons. In these Lessons, you'll learn:

- What *Half-Steps* are
- Two different names for the black keys: *Flats* and *Sharps*
- What *Sharps* and *Flats* look like
- How to play with your left hand
- How to play in more advanced hand positions

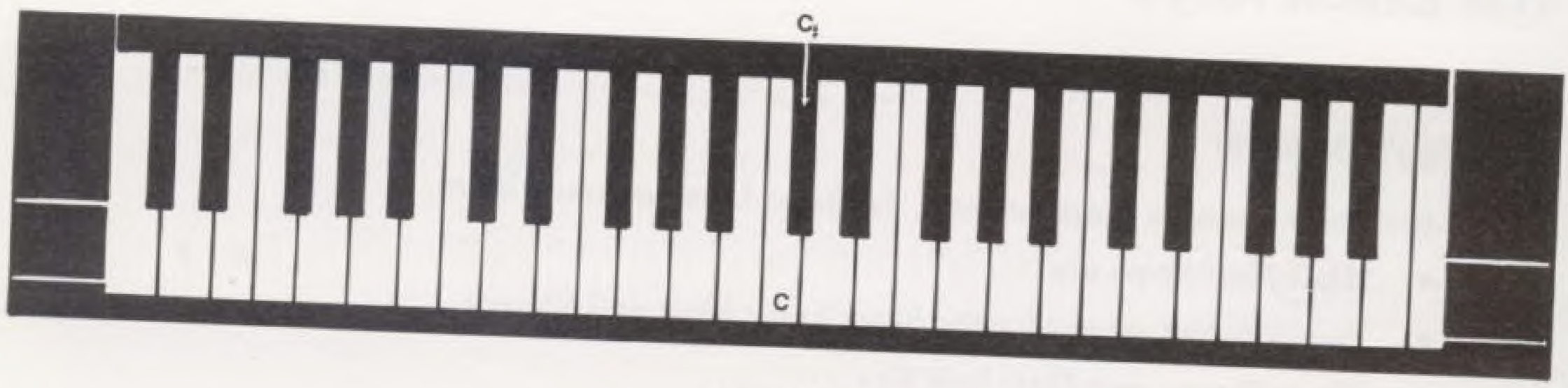
Half Steps

Moving a *Half Step* means moving to the key to the left or right of the last key pressed. For example, the black key to the right of Middle C is a *half-step up* from Middle C. The same key is also a *half-step down* from D.

Incidentally, two half-steps make a whole step. Think of a whole step as the distance between two white notes that have a black note between them.

Sharps

Sharps are the black keys on your keyboard. Each sharp takes its name from the white key on its left. For example, the black key that is one half-step up from Middle C is called *C-Sharp* (written as $C\sharp$).



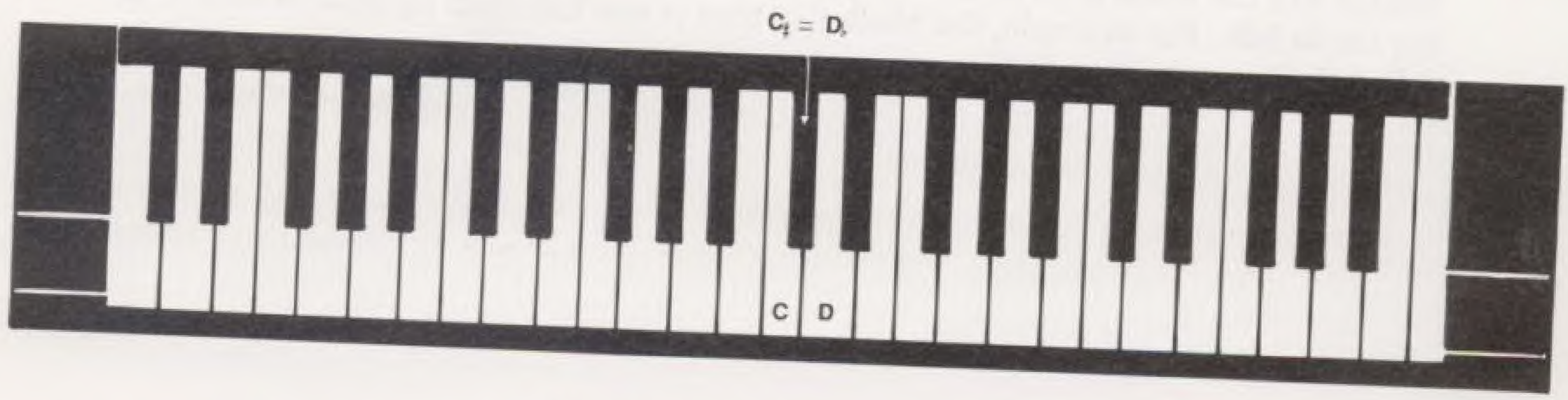
C and C♯

To help remember where the sharp is, think of what happens when you sit on something sharp: you jump UP. In this case, up is up the keyboard, or to the right. For example, a D♯ is one key up (to the right) from D.

Flats

When you talk about notes that are one half-step *down* from a white key, they are called *Flats*. This means that Flats are *also* the black keys on your keyboard. Don't let this confuse you. Each black key really *does* have more than one name. It's the flat for the key above it, and the sharp for the key below it.

For example, C♯ is also called *D-Flat* (written as *D♭*).



C♯ and D♭ are the Same Note

To help remember which side of a white key its flat is on, consider that if you get a flat tire, the tire goes down. For example, a D♭ is one key down (to the left) from D.

Left-Handed Playing

So far, you've only practiced playing with your right hand. You've learned how to hold that hand in a ready position and you've strengthened your fingers in the process.

In this section, your left hand gets some practice. The same rules regarding hand position apply:

- Hold your arms so that they hang comfortably at your side.
- Hold your hands so that your wrists are not bent.
- Curl your fingers as if you were holding a tennis ball. Your thumb and index finger should form the letter C.
- Your fingers should bend downward toward the keys from your knuckles.

Later, you'll learn to play with both hands at the same time.

New Finger Positions

After your left hand goes through basic training, your right hand gets a chance to try more advanced positions. This time you'll play a melody with some of your fingers on black keys and some on white keys. You'll place your thumb on E, your index finger on G♯, your middle finger on A, your ring finger on B, and your pinky on D♭!

Section 3 - The Lessons

03.01 LEARNING SHARPS - Introduces sharps and assigns a black key to each finger of the left hand.

03.02 PLAYING SHARPS - You play *Old MacDonald* with your left hand, using black keys only. When playing black keys, use the pads of your fingers instead of the tips. This keeps your fingers from accidentally sliding off the black keys.

No finger numbers appear on the screen in this Lesson. If you need a reminder for your finger position, press the "B" button to return to Lesson 3.01, in which you get into position.

03.03 LEARNING FLATS - Introduces flats and shows you a hand position that combines both black and white keys.

03.04 PLAYING FLATS - You play *Jingle Bells* with your left hand, using both black and white keys. If you get out of position, use the "B" button to return to Lesson 3.03.

03.05 SHARP & FLAT SOUNDS - Demonstrates that the same note can be called both a sharp and a flat, and introduces half-steps.

03.06 TIME FOR A QUIZ - Flashcards quiz you about sharps, flats, and half-steps. Answer by moving the on-screen arrow to the correct answer by using the up and down keys. Then press the "A" button. If you get an answer wrong, use the up and down keys to try a different answer. When you answer correctly, press the "A" button to move on to the next question.

03.07 PLAYING SHARPS & FLATS - Introduces a more advanced position for the right hand, combining both black and white keys.

03.08 PLAYING SHARPS & FLATS - You play *The Worms Crawl In* without the metronome. Don't worry about tempo or rhythm. Concentrate on playing the right notes.

Section 4
Rhythm

What You'll Discover

Section 4 contains eight Lessons. In these Lessons, you'll learn:

- What *Rhythm* is and how it relates to beats
- How to divide a beat into two or three parts
- What *Eighth Notes* and *Quarter Notes* are
- What *Tapping* is, and why you would use it

Rhythm

So far, you've played one note for every beat of the metronome. In most music, however, you must play some notes faster and some notes slower.

The relationship between faster and slower notes is called *rhythm*. Think of *rhythm* as the speed at which you play individual notes.

Be careful not to confuse rhythm with tempo. Tempo is the overall speed for an *entire* piece of music. In other words, tempo determines how fast the beats are. Rhythm determines how many notes are played during each beat.

Slicing Beats

One of the most important rhythmic concepts you will learn is how to divide a beat into equal parts. Beats may be divided into any number of equal parts, although two, three, and four parts are most common.

In this Section, the Miracle teaches you how to divide beats into both two equal parts and three equal parts.

If you have trouble dividing the beats, try this exercise for dividing beats into three parts per beat:

1. Tap your foot in a comfortable and even tempo. Consider each tap equal to one beat.
2. Say "1-2-3 1-2-3 1-2-3" repeatedly, trying to say the "1's" at exactly the time you tap your foot. The "2's" and "3's" should come between the taps.

3. Slow down or speed up your counting as needed. If you're counting too slowly, you'll tap your foot before getting back to "1." If you're counting too fast, you'll say "1" before tapping your foot. Make sure you say the numbers evenly — don't say "1-2-3" and then take a big pause before saying the next "1-2-3."

Use the above exercise to divide a beat into four parts by counting "1-2-3-4" instead of "1-2-3." To divide a beat into six parts, count "1-2-3-4-5-6."

Naming the Speeds of Notes

There is a name for each different speed that a note can be played at. Notes played at one note per beat are called *quarter notes.* So far, you've played only this type of note.

Notes played at a speed of two per beat are called *eighth notes.* This is because they last half as long as quarter notes:

$$\frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$

By the same reasoning, notes played at a speed of four per beat are called *sixteenth notes.*

Tapping

Tapping means playing a single note on the keyboard (such as Middle C), in time with the rhythm of a piece of music. Use it to familiarize yourself with the rhythm of a piece.

Tapping can make learning a new piece of music easier, because you don't have to learn both the rhythm and melody at the same time. Once the rhythm becomes familiar, you can better focus your concentration on which notes to play.

In this Section, you'll tap out the rhythm to *Jesu, Joy of Man's Desiring* by Johann Sebastian Bach. A master organist and teacher, Bach was one of the most prolific composers of the 18th century. Over the course of his lifetime, he generated thousands of musical compositions...and thirteen children.

Four of Bach's children, as well as fifteen other members of the Bach family, also had notable careers in music.

Section 4 - The Lessons

04.01 DIVIDING BEATS IN 2 - Demonstration of dividing each beat into two equal parts. Notice how the beats are evenly spaced and the notes are evenly divided within the beats.

04.02 PLAYING EIGHTH NOTES - Introduction to playing rhythms with eighth notes (two notes per beat). Many beginners find it tricky at first to divide beats evenly. If you have trouble, say "1" during each metronome tick of the lead beats. When the piece starts, say "1-2" for every beat, making sure you say the "2" between the beats.

04.03 THE ROBO-MAN STORY - Practicing eighth note rhythms with Roboman. Remember to use only one key to play the rhythm. The Miracle plays the right notes no matter which key you press.

If you have trouble, keep the following in mind:

- Wait for 4 lead beats.
- Listen to the speed of the metronome.
- Strike a key at each power plug to get fuel.
- Lift the key to save fuel when Roboman is already on a bridge.

If you're still stuck, try the game by looking at the bottom half of the screen. Press a key each time the blue bar passes over a note.

04.04 TAPPING - Introduction to tapping. The Miracle plays the right notes, but you have to keep in rhythm. Remember to play two notes per beat.

NOTE: This melody begins with only three lead beats. Don't let that throw you off.

04.05 BEATS IN 3 PARTS - Demonstration of dividing beats into three equal parts.

04.06 YOUR TURN - Practice at playing three notes per beat. If you have trouble, try thinking or saying "1-2-3" in time with each beat.

04.07 BACK TO ROBO-MAN - Using Roboman to practice playing three notes per beat.

04.08 DIVIDING BEATS INTO 3 - Tapping practice at three notes per beat. Concentrate on the rhythm. The Miracle plays the proper notes. The music, incidentally, is "Jesu, Joy of Man's Desiring" by Johann Sebastian Bach. It begins with three lead beats.

Section 5
The Staff

What You'll Discover

Section 5 contains seven Lessons. In these Lessons, you'll learn:

- What Staff Notation is
- What the parts of the staff are
- How quarter notes look in staff notation
- How to read notes on a staff

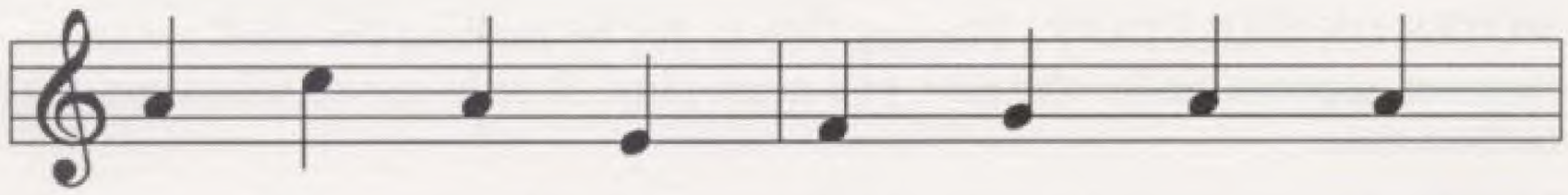
Staff Notation

Every language has two forms: spoken and written. English writing uses letters to form words. Ancient Egyptian writing used pictures to form ideas. Music uses a special type of writing called *Staff Notation*.

The Staff

A *Staff* is a set of five, evenly-spaced horizontal lines. Each *line* of the staff represents a different note. Each *space* between the lines also represent a note.

Notes that appear near the top of the staff are higher-pitched notes. Notes that appear near the bottom of the staff are lower-pitched notes.



The Staff

Early Staffs

Staffs did not always look like they do today. When Italian monk Guido d'Arezzo invented the staff in the early 11th century, he suggested using either three or four lines to a staff.

In the 17th century, the five-line staff became the standard for musical notation.

Quarter Notes in Staff Notation

The position of a note on the staff determines only which note to play. It provides no information about rhythm.

For rhythm, it is the *symbol* that represents a note that determines how fast or slow to play it.

The quarter note symbol looks like a solid black circle with a vertical stem growing out of one side.

Quarter Note

Other notes, such as eighth notes and sixteenth notes have their own unique symbols, which you'll learn later.

Reading a Staff

Reading a staff is like reading a book. You start at the left and read to the right. When you get to the end of the line, you go down to the next staff and start again.

Later, when you encounter more challenging music, you'll see two staffs that are connected by vertical lines. The top staff shows what notes to play with your right hand while the bottom staff shows what notes to play with your left. When two or more notes on either or both staffs line up vertically, it means to play them at the same time.

Section 5 - The Lessons

05.01 READING MUSIC - Introduces the concept of the staff.

05.02 NOTES ON THE STAFF - Playing *Ode to Joy* by reading the staff notation. A finger number appears under the note you must play. It only moves when you play the correct note.

NOTE: The black circles (notes) indicate pitch only. Concentrate on which note to play, instead of the rhythm at which you play it.

05.03 MUSICAL MALLARDS - An arcade game that teaches how to read music. Throw a tomato to hit the left-most duck by playing the note that the duck swims across. The stack of tomatoes at the right side of the screen shows the number of tries per duck. If you miss a duck, the tomato splats on the staff. Use the splat to decide if the note you played was too high or too low.

05.04 MORE MALLARDS - More practice tossing tomatoes at ducks. This time though, you'll play a new tune, *Journey*. Begin with your thumb on Middle C.

05.05 USING THE TREBLE CLEF - Practice playing *Journey* by reading staff notation. Start with your thumb on Middle C and concentrate on playing the correct notes. Don't worry about rhythm.

05.06 ADDING THE METRONOME - Introduces quarter note and fingering notation. This is your first performance reading from full staff notation. There is pitch and rhythm information for each note, and fingering notation (finger numbers) wherever the pitch changes.

You'll play *Journey* with the metronome turned on. Because every note is a quarter note, play one note per beat.

05.07 DUET DUET - The Miracle joins in as an invisible left hand while you play *Journey* with your right. Concentrate on playing the right notes and keeping in rhythm.

Section 6
Notes on the Treble Staff

What You'll Discover

Section 6 contains twelve Lessons. In these Lessons, you'll learn:

- What *Clefs* are, and how they affect staffs
- What a *Treble Staff* is
- What notes lie on the Treble Staff and how to read them

Clefs

A *Clef* is a symbol that appears at the left of each staff to indicate what notes the lines and spaces of the staff represent. They come in several varieties, and each type assigns a different set of notes to the staff.

Treble Clef

Two types of clefs are used with piano. These are treble clefs and bass (pronounced *base*) clefs. Treble clefs resemble an ampersand (&) with a fish hook at the bottom. Bass clefs look like a giant comma, followed by a colon (:).

Bass Clef

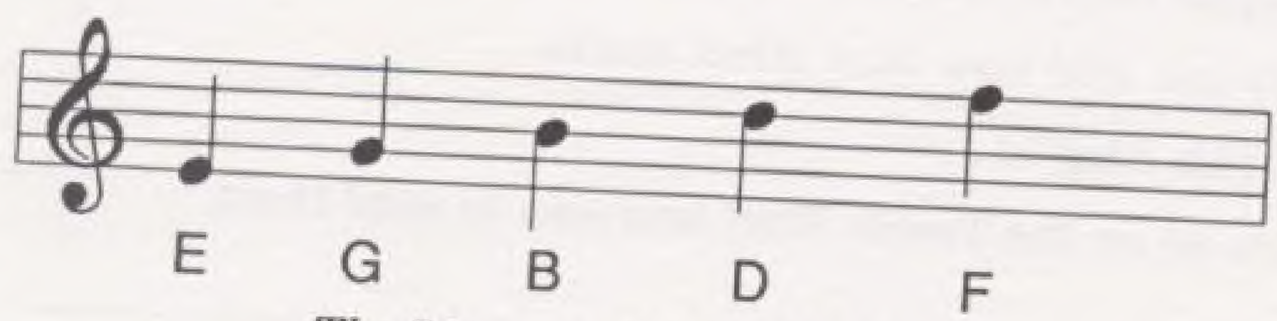
The Treble Staff

A *Treble Staff* is a staff that begins with a treble clef. Notes on the treble staff are always played with the right hand.

Lines on the Treble Staff

The lines on the treble staff (from bottom to top) are the notes E, G, B, D and F. The *E* is the E just above Middle C. The *F* is the highest F on the Miracle keyboard.

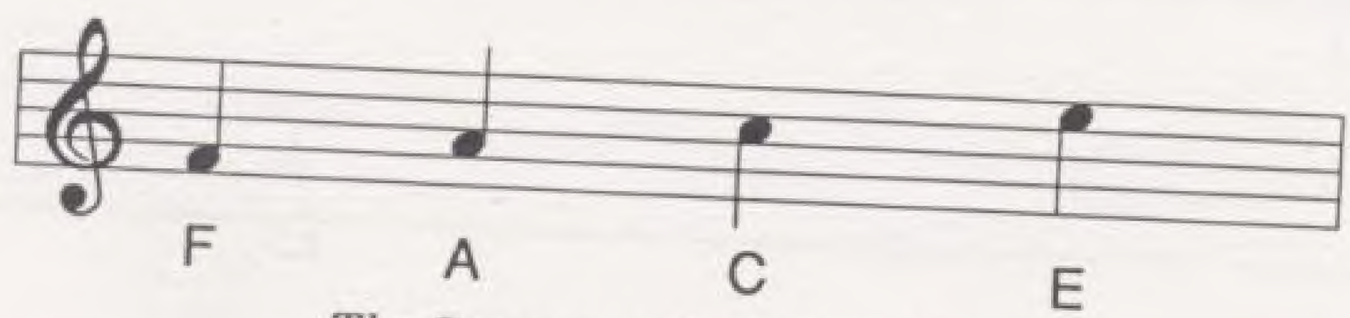
To remember the notes on the treble staff, remember the phrase "**E**very **G**ood **B**oy **D**oes **F**ine."



The Lines on the Treble Staff

Spaces on the Treble Staff

The spaces on the treble staff (from bottom, up) are the notes F, A, C, E. These notes are easy to remember, because they spell the word *FACE*.



The Spaces on the Treble Staff

Section 6 - The Lessons

06.01 THE TREBLE STAFF - Introduces the treble staff and the notes for each of its lines.

06.02 PLAYING ON TREBLE LINES - Practice in playing notes from the lower four lines of the treble staff. Hit *B* to return to Lesson 6.01 if you have problems.

06.03 SHOOTING GALLERY - Throwing tomatoes at ducks provides more practice in playing notes from the lower four lines of the treble staff. You get a lot of tomatoes to throw per duck, but work on keeping your splats to a minimum.

06.04 LINE QUIZ - The Chalkboard introduces the Treble Clef symbol, and Flashcards quiz you about the lines of the Treble Staff.

06.05 TREBLE STAFF SPACES - Identifies the notes for each space in the treble staff.

06.06 TREBLE STAFF SPACES - Practice in playing notes from the four spaces of the treble staff. Hit "B" to return to Lesson 6.05 if you have problems.

06.07 SPACE QUIZ - Flashcards quiz you about spaces on the treble staff.

06.08 LINES & SPACES TOGETHER - You play *Northwood*, using notes that appear on the treble staff. The piece is written in one hand position, and you'll use your knowledge of the treble staff (and the help of finger numbers) to figure out what that position is.

06.09 LINE & SPACE DUET - The Miracle is your invisible left hand as you play *Northwood* with the metronome turned on. If you have trouble, press "B" to return to Lesson 6.08, and practice until you feel more comfortable with this hand position.

06.10 MORE LINES & SPACES - This is your first performance using more than one hand position. You'll play *For Laura*, using your thumb to play two different notes. If you have problems, make sure your pinky is on the *C* above Middle C. Your thumb moves back and forth between *E* and *F*.

06.11 LINES AND SPACES IN TIME - You play *For Laura* in time with the metronome. Don't be thrown off by the six lead beats or the different symbols in the music. Concentrate on playing the correct notes, at the rate of one per beat.

06.12 LINE AND SPACE DUET II - The Miracle joins you in a performance of *For Laura*. Don't let the accompaniment distract you. As before, concentrate on the metronome and remember to play one note per beat.

Section 7
Playing in Different Hand Positions

What You'll Discover

Section 7 contains seven Lessons. In these Lessons, you'll learn:

- How to play with multiple hand positions
- Strategies for playing with different hand positions
- How written music forms patterns, which make playing easier

This Section provides some new and interesting challenges. To be ready for them, you should have already mastered the earlier Sections. Especially make sure that the Section 6 Lessons are easy for you to play. Also make sure you know the names and key locations of the notes on the treble staff.

Positions At Every Turn

In the music you've played so far, you've needed only one or two hand positions per piece. Most music, however, requires many hand positions. Your hand must constantly move from one position to the next.

Pianists make the most mistakes during these transitions. Moving from one hand position to another can be tricky, so you need to be careful to make sure you don't lose your bearings.

Strategies For Changing Hand Positions

One way to make these transitions easier is by *reading ahead* while you play. Reading ahead in music, is like flipping to the back of a mystery novel to find out "whodunit." When reading music, glance ahead to where the next hand position is indicated. The transition is easier when you know what's coming up.

Another way to simplify transitions is to move to the new position as early as possible. If your hand is already in place for the first note in a different position, there is less chance of making a mistake. If you can, try to position all of your fingers for the new hand position, not just the finger for the first note you'll play.

Patterns of Music

If you look at a piece of music, you'll notice patterns of rising and falling notes. This is true of all music, although the patterns of each piece differ. Think of notes forming patterns in the same way that letters form words.

Learning to recognize these patterns teaches you to think in *groups* of notes, rather than individual notes. With experience, you will no longer think about the specific notes you play. Instead, you'll directly translate the shapes of these patterns into hand movements. This makes your performances more fluid, and the music much easier to play and remember.

Section 7 - The Lessons

07.01 HAND POSITIONS - Introduces frequently switching hand positions. When changing positions, it's easy to lose your bearings. Be sure to follow the fingering very carefully.

07.02 MOVING HANDS - Practice switching hand positions with the metronome turned on. Finger numbers only appear where the fingering is not obvious. This is standard in piano notation. Numbering every note clutters the score, making it harder to read.

07.03 FASTER NOTES: FOR SUE - The Miracle demonstrates a faster piece named *For Sue*. During the demo, notice how the notes of the melody fall into a regular pattern. In this case, the notes come in groups of three. Each group goes up the keyboard one note at a time, or down the keyboard one note at a time.

Always try to look for patterns. You'll find learning pieces much easier.

07.04 MANY HAND POSITIONS - A chance to practice *For Sue* without the metronome or accompaniment. As you play, try to *feel* how the notes go up or down from the first note in each group.

07.05 SLOW HAND CHANGES - You play *For Sue* with the metronome. The tempo is slow, to let you get used to changing hand positions while keeping in tempo. No rhythm markings appear. Play quarter notes, one note per beat.

07.06 TWO NOTES PER BEAT - Another performance of *For Sue* with the metronome. This time, however, you'll play two notes per beat. If you have trouble, try thinking (or saying) "1-2" for each metronome tick.

07.07 MOVING HAND DUET - The Miracle joins you for a full-speed performance of *For Sue*. Remember to play two notes per beat. If you have trouble with the fingering, concentrate on putting the correct finger on the first note of each three-note group.

Section 8
Accidentals

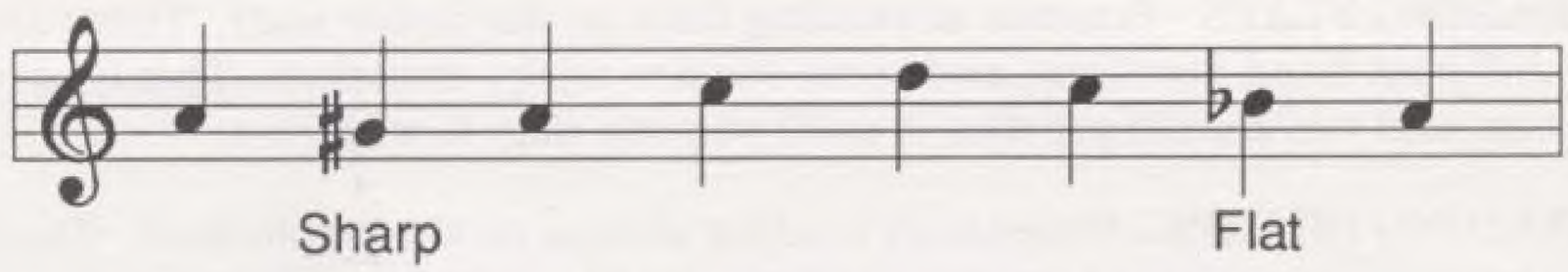
What You'll Discover

Section 8 contains nine Lessons. In these Lessons, you'll learn:

- What *Accidentals* are, and how to read them on the staff
- What *Stretches* are, and how to play stretches
- What *Thumb Unders* are, and how to play them

Accidentals

Simply put, *Accidentals* are flats and sharps. Accidentals appear on the staff as a note preceded by the flat symbol (♭) or the sharp symbol (♯).



How Sharps and Flats Appear on the Staff

Earlier, you learned that all black keys play flats and sharps. However, not all flats and sharps are on black keys! Remember that a flat is one half-step below (one key to the left of) its unflatted neighbor. The key to the immediate left of Middle C is a white key, *B*. That means that B can also be called *C*♭. Likewise, the key to the immediate left of F is E. That means that E is also *F*♭!

Likewise, because sharps are one half-step above their unsharped neighbors, C and F can also be called B♯ and E♯.

Stretches

As you've learned, good hand position is extremely important for playing with accuracy and control. This is especially true at the times when you must stretch out your fingers to reach all of the notes within a hand position.

The pieces in this session require such stretches. When making the stretches, concentrate on keeping your hand level with your arm. This means don't bend your wrist, and make sure your knuckles are higher than your fingers. Larger stretches are easier to make if you keep your body close to the keys.

Thumb Unders

When changing hand positions, you must frequently move your thumb to a place that is currently under the palm of your hand. Although you can do this by shifting your entire hand at once, the notes you play will connect more smoothly if you do a *Thumb Under* instead. This means, move your thumb to the new key *before* moving your fingers. Once your thumb is in place, you use it as a reference point to move the fingers. This move is called a thumb under because your thumb moves under your fingers to the the new postion.

Keep your hand level and straight when doing thumb unders. Make sure not to twist your hand or swivel your wrist.

Section 8 - The Lessons

08.01 READING FLATS - Practice at reading flats on the treble staff. There are a number of different hand positions, and some require tricky stretches. This is an important lesson and you should practice it until you can play it with ease.

08.02 READING SHARPS - Practice at reading sharps on the treble staff. The second line of the piece has a *thumb under* which moves the right hand into a higher position. Move your thumb under your palm so that you don't twist your wrist and arm unnecessarily. This is also an important lesson and should be practiced until you can play it smoothly.

08.03 FLATS QUIZ - Flashcards quiz you about flats.

08.04 FLATS ON WHITE KEYS - More practice at reading flats on the treble staff. Don't forget that C♭'s and F♭'s fall on white keys. Be prepared for some tricky stretches here too. Practice this piece until you can play it smoothly.

08.05 READING SHARPS - Practice reading sharps on the treble staff while tossing tomatoes at ducks. Don't forget the B♯'s and E♯'s fall on white keys.

08.06 QUIZ: FLATS & SHARPS - Flashcards quiz you about flats and sharps.

08.07 PLAYING SHARPS & FLATS - Practice reading music that has both sharps and flats. You'll play *Sharps 'N Flats*, a piece that really tests your knowledge of accidentals. Don't be discouraged if it takes some work to get it right. Also, be prepared for a big thumb under in the second half.

08.08 ADVANCED ACCIDENTALS - Playing *Sharps 'N Flats* with the metronome turned on. Play one note per beat.

08.09 ADVANCED SHARPS & FLATS - The Miracle provides an eerie accompaniment as you play *Sharps 'N Flats.*

Section 9
More About Rhythm

What You'll Discover

Section 9 contains nine Lessons. In these Lessons, you'll learn:

- How to divide beats into four parts
- How to play notes of different *lengths*
- What *Rests* are
- What an *Ostinato rhythm* is

Four Part Beats

Earlier, you divided beats into two parts and into three parts. You mentally counted "1-2" for the two part beats and "1-2-3" for the three part beats. The same technique applies for dividing beats into four parts. For every beat, count "1-2-3-4."

Sixteenth Notes

When you play four notes every beat, you are playing *sixteenth notes.* They get their name because they are played one-fourth as long as quarter notes (which are one note per beat).

$$\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$$

Notes of Different Lengths

So far, you've played music made up entirely of quarter notes, entirely of eighth notes, and entirely of sixteenth notes. The rhythm of music with each of these types of notes is different because each quarter, eighth and sixteenth notes each have different *lengths.*

Quarter notes are fairly long notes because you can only play one per beat.

Eighth notes are shorter in length. Two eighth notes can fit into one beat.

Sixteenth notes are even shorter. You can play four per beat.

In this section you'll learn to combine these notes of different lengths to create interesting rhythms.

Rests

Even more interesting rhythms can be created by adding brief moments of silence. Such silent moments are called *rests*, and vary in length the same way that notes do. Playing a *quarter rest*, for example, means to have silence for one beat.

Ostinato Rhythms

An *Ostinato rhythm* is a rhythmic pattern (a group of notes and rests of different lengths) that repeats over and over again. The word "Ostinato" comes from the word *obstinate*, which means "stubborn."

In this section you'll practice tapping a piece with an Ostinato rhythm.

Section 9 - The Lessons

09.01 DIVIDING BEATS IN 4 - Demonstration of four notes per beat. As the Miracle plays, count "1-2-3-4" for each beat.

09.02 SIXTEENTH NOTES - Introduces tapping out the rhythm of sixteenth notes. Many find it tricky at first to make four taps per beat. Use the lead beats and your "1-2-3-4" count to get in sync.

09.03 HEARING RESTS - Demonstration of a rhythm that incorporates rests. Even though there isn't any sound during a rest, it is just as important to *feel* the length of a rest as it is to feel the length of a note. Try to feel the rest on the second part of each beat.

09.04 PLAYING RESTS - You play the rhythm that the Miracle just demonstrated. If you have trouble with the timing, try counting either "1-2-3-4" or "1-rest-3-4." If you're still stuck, press the "B" button to go back to Section 09.03, and listen to the rhythm.

09.05 PLAYING NOTES AND RESTS - Practice at "figuring out" a rhythm. You do this in two steps:

1. Divide each beat evenly, based on the shortest note or rest. If the shortest note lasts one-quarter of a beat, divide the beat into fours and count "1-2-3-4."
2. Play notes on the correct subdivisions. Say the numbers where they exist and say "rest" where rests exist.

If you get stuck in this lesson, think "Rest-Rest-3-4."

09.06 HEARING NOTE LENGTHS - Practice playing rhythms with notes of different lengths. Longer notes are actually just a bunch of shorter notes held together.

If you have trouble during this lesson, think "1-Hold-3-4."

09.07 LONG & SHORT NOTES - A Roboman session for practicing rhythms with notes of different lengths. Use the same rhythm you used in Lesson 09.06. During the lead beats, think "1-hold-3-4."

09.08 OSTINATO RHYTHM - Demonstration of an Ostinato rhythm. Music with Ostinato rhythms are relatively easy to learn because one short rhythm repeats throughout the entire piece. As the Miracle plays, notice how the notes change, but the rhythm remains the same.

09.09 TAPPING OSTINATO RHYTHM - Tapping practice with Ostinato rhythms. Remember to think "1-Hold-3-4" for each beat.

More About Rhythm

Section 10
The Miracle Equation

What You'll Discover

Section 10 contains five Lessons. In these Lessons, you'll learn:

- What the *Miracle Equation* is
- How to bring pitch and rhythm together

The Miracle Equation

So far, you've mastered playing different notes at a steady rhythm, and different rhythms on a single note. To play music, you must combine these skills.

We call this combination of notes and rhythms the *Miracle Equation*. Think of it as:

Notes + Rhythm = Music

Combining Pitch and Rhythm

In this session, you'll learn to play *For Denise*. This piece combines notes of different pitch with an ostinato rhythm.

Combining pitch and rhythm is a new skill, and it can take a little practice to get the hang of. If you have trouble at first, don't get discouraged. With a little practice, it will soon become easy.

Section 10 - The Lessons

10.01 OSTINATO RHYTHM - Practice at tapping out ostinato rhythms. This lesson is a review, identical to the last lesson of Section 9.

10.02 NOTES AND FINGERING - You play the notes to *For Denise* with the metronome turned off. There are some tricky hand position changes. Practice them until they become easy.

10.03 WHAT IT ALL SOUNDS LIKE - Demonstration of *For Denise*, played in the ostinato rhythm from Lesson 10.01. Later in this Section, you'll play the right hand part of this piece.

10.04 NOTES AND RHYTHM - Practice playing *For Denise* in rhythm. The tempo is very slow for your first performance. Remember to think "1-Hold-3-4" for each beat.

10.05 OSTINATO & ACCOMPANIMENT - The Miracle plays left-hand accompaniment to your performance of *For Denise*. If you have trouble with the notes, go to the practice room and rehearse by choosing *Practice Notes*. Try practicing with the "1-Hold-3-4" rhythm.

Section 11
The Bass Staff

What You'll Discover

Section 11 contains seven Lessons. In these Lessons, you'll learn:

- How to read the *Bass Staff*
- How to play with your left hand
- How to play by interval

The Bass Staff

In piano notation, the bass (pronounced *base*) staff is the staff that appears below the treble staff. This type of staff is normally associated with the male voice and low-pitched instruments. On the piano, it is associated with the left half of the keyboard.

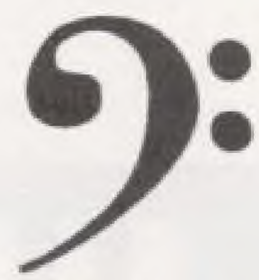
Notes on this staff are played with the left hand. These notes traditionally make up the *bass line* or accompaniment of a piece of music. Notes on the treble staff are generally referred to as the *melody.*

The lines and spaces on the bass staff have note names different from the lines and spaces on the treble clef.

Base Clefs

Each bass staff begins with a *bass clef* symbol. This symbol looks like a giant comma, followed by a colon.

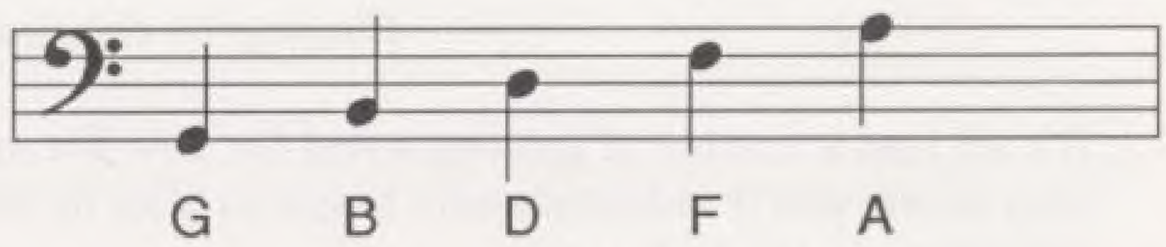
The bass clef symbol is sometimes called an *F clef*, because the note that falls between the two dots is an F (the F below Middle C).



Bass Clef

Lines on the Bass Staff

The lines on the bass staff (from bottom, up) are the notes G, B, D, F and A. The *E* is the E just above Middle C. The *G* is the lowest G on the Miracle keyboard.



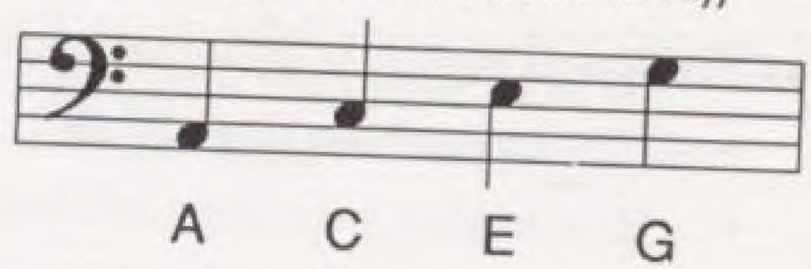
The Lines on the Bass Staff

To remember the lines on the bass staff, remember the phrase "**G**reat **B**rains **D**on't **F**orget **A**nything."

Spaces on the Bass Staff

The spaces on the bass staff (from bottom, up) are the notes A, C, E and G. To remember the spaces on the bass staff, think "**A**ll **C**ars **E**at **G**as."

The Spaces on the Bass Staff

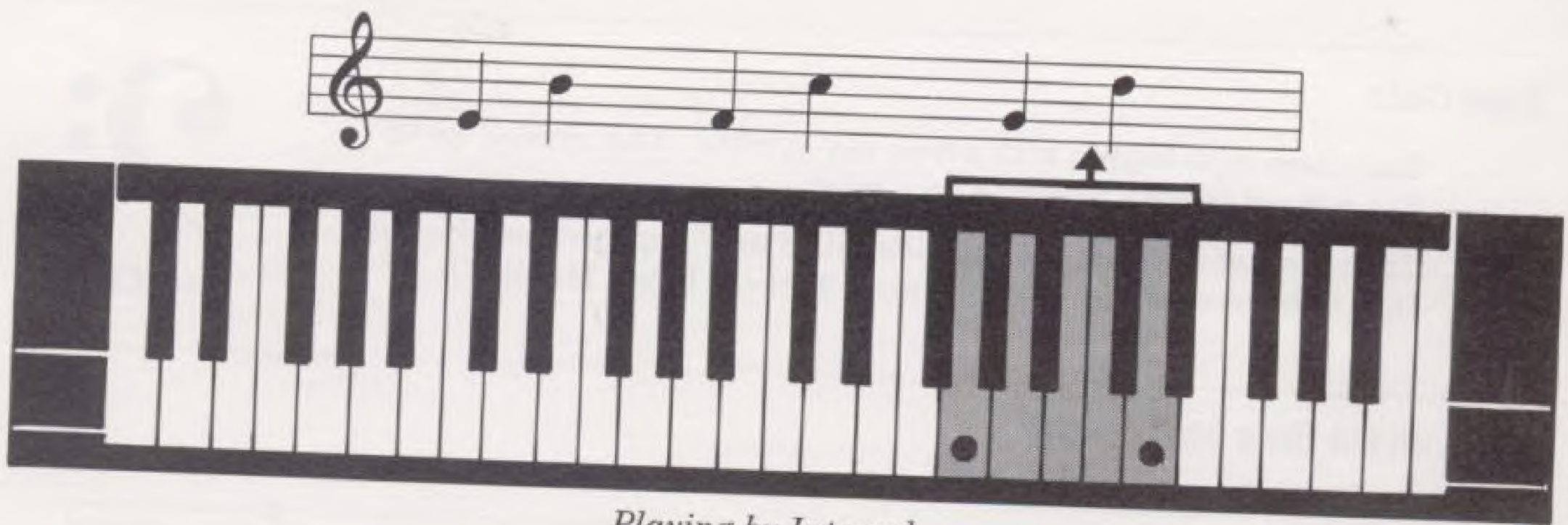


Playing By Interval

Earlier, you learned how finding patterns of notes makes reading music faster and easier. Another way to speed your reading is to *play by interval.*

Playing by interval means associating the relative distance between two notes on the staff with two notes on the keyboard. It's like reading a map in which you see an inch and know it means a mile. Then if something looks like two inches, you know it means two miles.

You can read music the same way. For example, the distance on the staff between E and B is the same as the distance between F and C, as well as G and D. They are each four notes apart, both on the staff and on the keyboard. Whenever you see notes that are that distance apart on the staff, you'll know that the second note to play is four notes away from the first.



Playing by Interval

It's all just a matter of getting a *feel* for how far apart things are on the staff. As you play more, you'll automatically begin to play by interval. The lessons in this section help get you started.

Section 11 - The Lessons

11.01 THE BASS STAFF - Duck hunting on the bass staff. If you miss ducks, try to get a feel for *how far* you missed by. This teaches you to associate the distance between notes on the staff with the distance between keys.

11.02 LINES ON THE BASS STAFF - Introduction to the notes along the lines of the bass staff. This piece has many hand position changes so pay extra attention to the fingering. Don't forget that your pinky (5) is on the left side of your thumb (1)!

11.03 BASS QUIZ - A flashcard quiz about the lines on the bass staff. Remember "**G**reat **B**rains **D**on't **F**orget **A**nything."

11.04 SPACES IN THE BASS STAFF - Introduction to the notes on the spaces of the bass staff.

11.05 BASS STAFF REVIEW - A flashcard quiz about the spaces on the bass staff. Remember "**A**ll **C**ars **E**at **G**as."

11.06 BASS STAFF MUSIC - You'll play *Eighty Eight* using just your left hand. Notes appear on both lines and spaces. Don't forget to look for patterns. You'll see that each group of four notes is on either lines or spaces, but not both.

This piece may take some extra practice so don't hesitate to repeat it. You'll learn a lot.

11.07 BASS STAFF DUET - The Miracle plays right hand as you perform *Eighty Eight.* If you have trouble, repeat Lesson 11.06 until you can play it fluidly.

The Bass Staff

Section 12
Accidentals on the Bass Staff

What You'll Discover

Section 12 contains six Lessons. In these Lessons, you'll learn:

- How to recognize and play accidentals on the bass staff
- How to make transitions between black and white keys
- How to play in a splayed-out position
- How to get the most out of your weaker fingers

Bass Staff Accidentals

Accidentals (Flats and Sharps) appear and are played on the bass staff exactly the same as they are on the treble staff.

When reading music with accidentals, don't forget that some flats and sharps are on white keys. The keys C♭ and F♭ are the same as *B* and *E*. The keys B♯ and E♯ are the same as *C* and *F*.

Transitions Between Black and White

Hand position changes between white and black keys can be tricky. When playing on both white and black keys, keep your fingertips close to the edges of the black keys at all times. This means that while playing white keys, keep your fingers near the center of the keys. This makes the transitions from white to black much easier. It also saves a lot of energy because you don't have to move your hand constantly forward and back.

Splayed-Out Fingers

Frequently, you'll have to play with *splayed out* (stretched) fingers. When playing this way, you should be aware of two factors that can disrupt your ready position.

First, the knuckles of your hand tend to collapse. Don't let them. Try to keep the knuckles as high as you can, being careful not to raise your wrist.

Second, splayed-out fingering tends to pull the weight of your arm away from your hand. This makes it especially hard to play with the weaker fingers. Try to be sensitive about how much weight is on your fingers so that you don't pull away when you stretch.

Playing With the Weaker Fingers

Your ring finger and pinky (4 and 5) are your weakest fingers. To compensate for this weakness, keep the weight of your arm shifted onto those fingers. The extra weight helps build strength in these fingers, and also makes it easier to play.

Section 12 - The Lessons

12.01 BASS FLATS - Practice playing flats on the bass staff. When striking black keys, use the pads of your fingers instead of the tips. You fingers should be less curved than they are when playing white keys.

12.02 WHITE KEY FLATS - Flashcards quiz you about flats on white keys.

12.03 BASS SHARPS - Practice playing sharps on the bass staff. This piece begins with an unusual fingering. Take time and practice until you can get it right. Try to play evenly while your hand expands and contracts throughout the piece.

12.04 BASS SHARPS AND FLATS - Practice playing the bass line of *For Jessica*, which includes both sharps and flats. Be extra careful of the fingering. Also, be prepared for the parts which use your 4th and 5th fingers. These parts are especially tricky. Practice until you can consistently play without errors.

12.05 BASS SHARPS AND FLATS - You perform the *For Jessica* bass line with the metronome turned on. The rhythm is a simple one note per beat.

Give extra attention to the parts with the large stretches and the parts that use the 5th finger. If these parts give you too much trouble, repeat Lesson 12.04.

12.06 BASS MUSIC - The Miracle joins in, adding the melody of *For Jessica* to your bass line. If the tempo is too fast, rework Lesson 12.05 until you feel more comfortable.

Section 13
Key Signatures

What You'll Discover

Section 13 contains seven Lessons. In these Lessons, you'll learn:

- What *Key Signatures* are and how they affect the staff
- What *Naturals* are, and how to play them

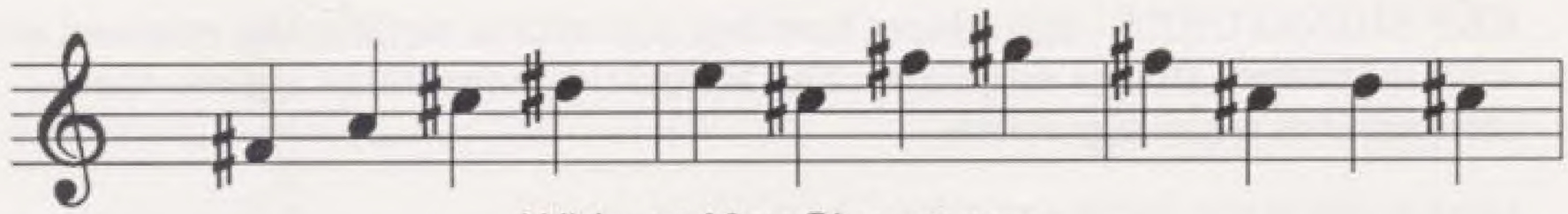
Key Signatures

In many pieces, a note on a line or space of the staff is consistently sharp or flat. In these pieces, the presence of a large number of ♯ or ♭ symbols make the notation cluttered and difficult to read.

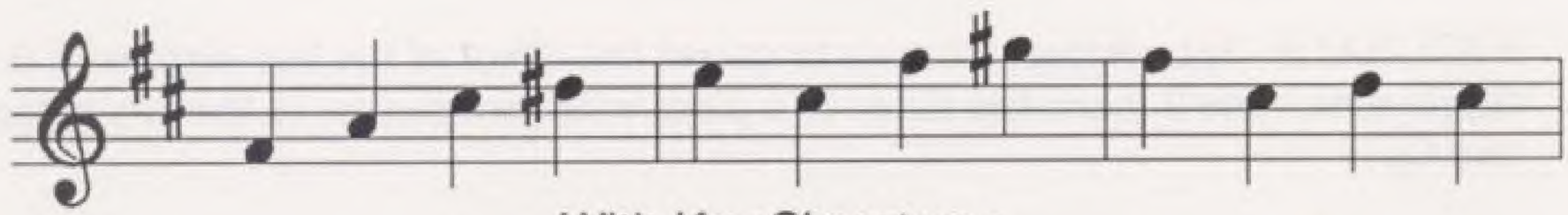
Key signatures simplify such notation.

In this system, a note which is consistently sharp or flat appears without ♯ or ♭ symbols. Instead, the symbol is placed next to the clef, on the line or space that the note falls on. A ♯ symbol tells you to play *every* note with the same note name sharped. A ♭ symbol tells you to play *every* note with the same note name flatted.

The key signature is the section of the staff where this group of ♯ or ♭ symbols appear.



Without Key Signatures



With Key Signatures

How Key Signatures Make the Notation Easier to Read

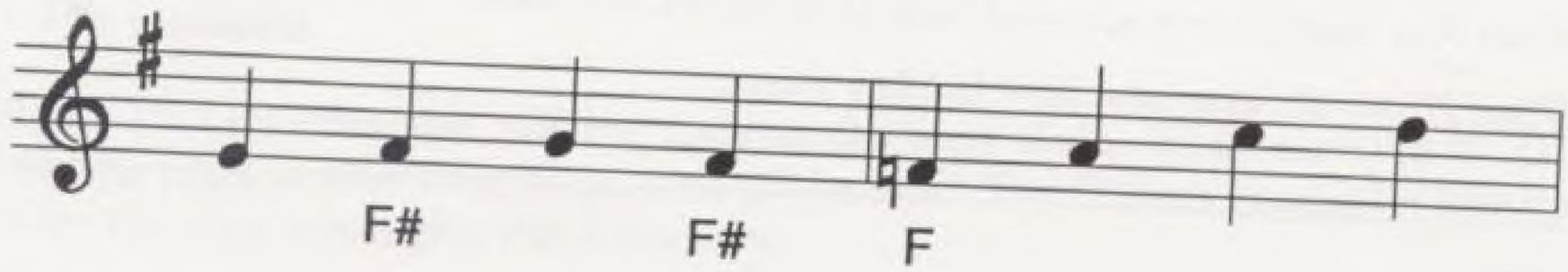
Key signatures came into common use in the 17th century, when musical notation evolved into the form that we use today.

Naturals

Sometimes the music calls for a note that cancels the effect of the key signature. In other words, a note that isn't sharp or flat, even though the key signature tells you to play it sharp or flat. Such notes are called *naturals.*

For example, the natural of $F_\sharp$ is F.

On the staff, the "natural" symbol, "♮" appears next to such a note.



How Naturals Affect the Key Signature

Like individual sharps and flats, naturals are accidentals. This is because they are something different from what you would normally play.

By the same token, notes that are played sharp or flat *because* of the key signature are *not* considered accidentals (they are normally played flat or sharp).

Section 13 - The Lessons

13.01 KEY SIGNATURES - Introduces how key signatures replace the symbols associated with individual sharps and flats. The Miracle demonstrates a piece that incorporates a key signature.

13.02 MORE ON KEY SIGNATURES - Left hand pitch practice with key signatures. Be sure that you play all F's as $F_\sharp$'s.

13.03 NATURALS - Introduces naturals to cancel the effect of the key signature for a single note. You'll learn the notes to a piece with two sharps in the key signature: $F_\sharp$ and $C_\sharp$.

13.04 REVIEWING ACCIDENTALS - Flashcards quiz you about key signatures and naturals.

13.05 SHARPS, FLATS & NATURALS - You'll learn the bass line to a jazz piece, *Top Ten.* The key signature has two sharps and the piece has several naturals. Be extra careful of the fingering. Try to make your transitions smooth while playing the stretches.

13.06 THE ACCIDENTAL METRONOME - Another performance of the *Top Ten* bass line. This time, the metronome is turned on. If you have trouble, repeat Lesson 13.05 until you can play it smoothly.

13.07 KEY SIGNATURE FINALE - You'll play the *Top Ten* bass line while the Miracle provides accompaniment. Don't let the off-beat rhythm of the accompaniment throw you off. This rhythm, called *syncopation*, is common in jazz and other forms of popular music. You'll learn more about syncopation later. For now, concentrate on maintaining an even one note per beat.

Section 14
More About Staff Notation

What You'll Discover

Section 14 contains eight Lessons. In these Lessons, you'll learn:

- What *Measures* are and why they're used
- What *Bar Lines* are and how they relate to Measures
- What the *Previous Accidental Rule* is
- What *Octaves* are and how they relate to Key Signatures
- How to tackle longer pieces by breaking them into parts

Measures and Bar Lines

You may have noticed that the notes in staff notation are broken into small groups, separated from each other by a vertical line. Each of these groups is called a *Measure*, also sometimes referred to as a *Bar*. The line that separates measures is called a *Bar Line*.

Measures break up a piece into small parts, making it easier to read. Without them, you would easily lose your place.

The length of a measure is determined by a set number of beats. This number varies from piece to piece, but generally remains constant within a piece. Common numbers of *beats per measure* are 3, 4, and 6. You'll learn more about beats per measure later.

Incidentally, the number of lead beats for a piece is always the same as the number of beats per measure.

Previous Accidental Rule

Measures and accidentals relate in a special way called the *Previous Accidental Rule.* This rule states that whenever an accidental appears in a measure, the accidental remains in effect for that particular note, for the rest of the measure.

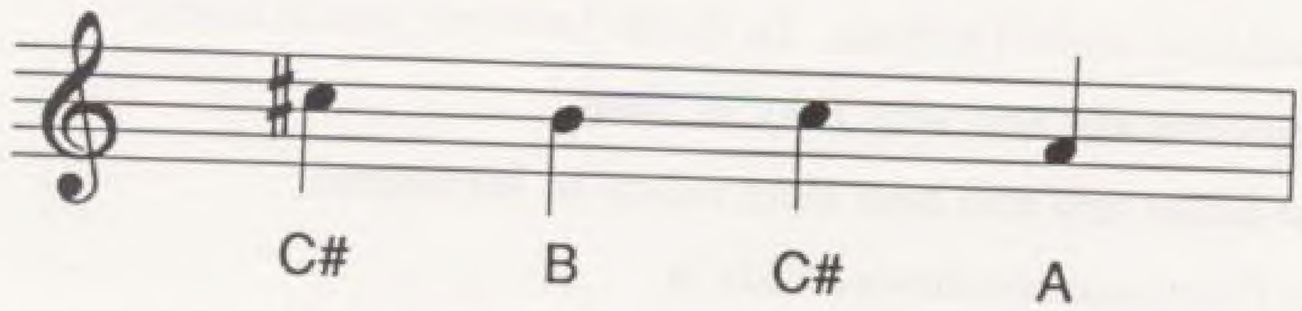


Illustration of the Previous Accidental Rule

This means that if the first note in the measure appears as a C♯ and the third note in the measure appears as a C, *both* notes are played as C♯. Only the first note has a ♯ before it.

In the above example, if the third note in the measure really was supposed to be a C, it would appear in the notation as a C♮.

The Previous Accidental Rule applies to all accidentals: sharps, flats, *and* naturals.

Octaves

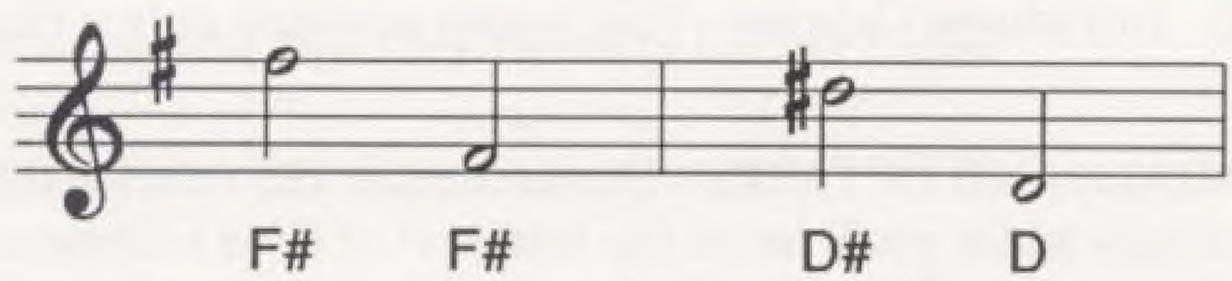
An *Octave* is the distance from one note to the next note above or below it that has the same letter name.

There are four octaves on the Miracle keyboard, which enables you to play a wide range of music. A standard piano keyboard covers slightly more than seven octaves.

Key Signatures, Accidentals, and Octaves

Key signatures affect all octaves. Accidentals affect only notes with the same letter name that are in the same octave as the accidental.

This means that a note that is sharped or flatted in the key signature, is played sharped or flatted in *every* octave. For example, the treble staff contains two F's. If the key signature shows a sharp on the top line (an F), *both* F's are played as F♯'s.



How Key Signatures and Accidentals Relate to Octaves

On the other hand, suppose F's are not sharped in the key signature, and an F♯ appears as an accidental on the top line of the staff. In this case, a note in the bottom space of the staff (an F) is not affected because of the Previous Accidental Rule. This is because it is in a different octave.

Breaking Up The Pieces

In this Section, you'll play *Gina's Lament*. This piece, written especially for the Miracle course, incorporates key signatures, accidentals, multiple octaves, and the Previous Accidental Rule. It's a real workout!

It's also twice as long as any piece you've played so far.

The easy way to learn a longer piece is to break it down into small sections that you can learn one at a time. Once you have mastered each section, it's easy to put them together.

Section 14 - The Lessons

14.01 GINA'S LAMENT - Introduces the concept of breaking longer pieces into short segments. You'll learn the notes to the first quarter of *Gina's Lament*. Don't forget to look at the key signature: both B's and E's are flat. Practice until you can play it smoothly.

14.02 MEASURES AND BAR LINES - Introduces Bar Lines and Measures as you learn the notes to the second quarter of *Gina's Lament.* Keep you eyes open for naturals in this part, and practice until it's smooth.

14.03 ACCIDENTALS AND MEASURES - Introduces the *Previous Accidental Rule* while you learn part three of *Gina's Lament.* Remember that when accidentals appear inside a measure, they remain in effect until the end of the measure for that particular note.

Because of this rule, the fourth note of this section is an $E_\natural$, rather than an $E_\flat$. The same rule applies to the last note of each measure in this Lesson.

14.04 OCTAVES - Introduces Octaves. This lesson contains only a chalkboard. There is no activity.

14.05 ACCIDENTALS AND OCTAVES - Demonstrates the relationship between octaves and accidentals while you'll learn the last part of *Gina's Lament.* You'll have to be alert, because notes affected by the key signature appear in two different octaves. Also, remember that an accidental in one octave does not affect a note of the same letter name in a different octave.

This part of the piece has some tricky stretches and thumb unders. Practice until you can make these transitions smoothly.

14.06 ACCIDENTAL SUMMARY - Flashcards quiz you about key signatures and accidentals. If you have trouble, remember:

- Sharps and Flats in the key signature affect all notes with the same letter name.
- Accidentals in the measure override the key signature.
- Accidentals in the measure follow the *previous accidental rule,* which causes the altered note to stay changed for the remainder of the measure.

14.07 MAKING ACCIDENTAL MUSIC - You'll play all of *Gina's Lament* with the metronome turned on. The rhythm is an easy one note per beat. Nevertheless, the piece is pretty long, so don't get discouraged if it takes awhile to play the piece smoothly.

14.08 THE ACCIDENTAL ORCHESTRA - You'll play *Gina's Lament* with the Miracle providing full accompaniment.

Section 15
Ledger Lines on the Treble Staff

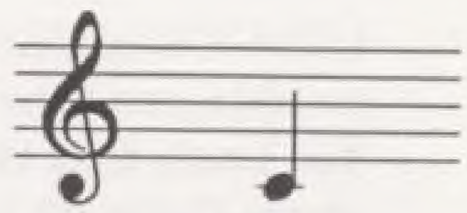
What You'll Discover

Section 15 contains seven Lessons. In these Lessons, you'll learn:

- What *Ledger Lines* are, and how they relate to the staff
- Which notes fall on Ledger Lines
- What *Thirds* are, and how they relate to Ledger Lines

Ledger Lines

Ledger Lines are short horizontal lines above or below the staff, which extend the staff up or down. They are used with notes that have higher or lower pitches than the notes on the staff. Middle C, for instance requires a ledger line.



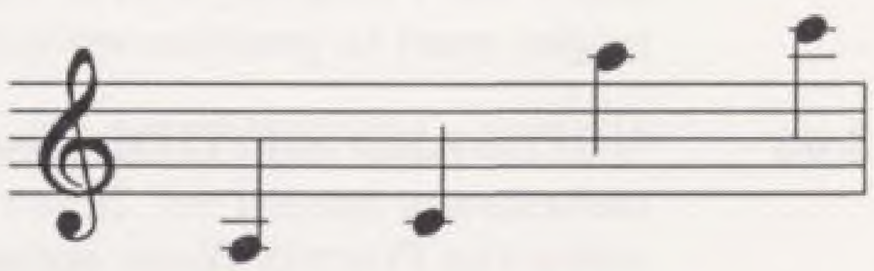
Middle C on the Treble Staff

Ledger Lines were not used extensively until 1523 when Italian organist Marco Antonio Cavazzoni published a collection of keyboard pieces entitled *Ricercari, motetti, canzoni.* Although these sound like types of pasta, the name refers to three forms of music that were popular in Cavazzoni's day.

Prior to the use of ledger lines, composers approached the problem of out of range notes by moving the clef to a different line on the staff. This effectively assigned different notes to each line. However, staffs with constantly changing notes made the notation difficult to read.

Notes on the Ledger Lines

Two ledger lines above and below the treble staff (and the spaces between them) are sufficient to represent the other notes associated with that staff. The two ledger lines below the treble staff represent Middle C and the A below Middle C. The two ledger lines above the treble staff also represent A and C, but two octaves higher. In fact, the C is the highest note on your Miracle keyboard.



Notes on Ledger Lines

Thirds

A *Third* is the distance between two adjacent lines on the staff or ledger lines. This distance is called a third because it involves three notes: the one on the lower line, the one on the space, and the one on the upper line. The distance between two spaces is also considered a third.

Thirds are a commonly used interval in music. When looking through notation for patterns of rising and falling notes, you'll find many patterns made up of thirds. As a result, recognizing thirds and associating them with a distance on the keyboard makes playing and reading notation easier.

Thirds are also important in the formation of chords (two or more notes played at the same time). You learn more about this later.

Section 15 - The Lessons

15.01 LEDGER LINES ABOVE - Introduces ledger lines above the treble staff. If you have trouble, read the ledger lines by counting up from the notes that you already know. You know that the top line of treble staff is an F. That makes the first ledger line above the staff, two white keys higher than F (an *A*). This kind of reading *by interval* is much quicker than counting up from the bottom of the staff.

15.02 LEDGER LINES BELOW - Introduces ledger lines below the treble staff, and the concept of thirds. If you have problems, try to play by interval, using the distance between notes, instead of thinking about specific note names. Start at *E* and follow the notes down one at a time. Because there are no large leaps, this piece is easy to read by interval.

15.03 LEDGER LINE QUIZ - Flashcards quiz you about ledger lines and thirds.

15.04 DUCKS AGAIN - Ledger line practice in the Shooting Gallery, to the tune of *Rosebud*. Don't forget that the key signature affects the notes in every octave. Those F♯'s and C♯'s apply to ledger line notes as well.

15.05 ADDING SOME RHYTHM - Rhythm practice. You'll tap out the ostinato rhythm used in *Rosebud* while the Miracle supplies the notes. The piece has a *short-short-long* rhythm of eighth and quarter notes. If this gives you trouble, you might want to practice working with rhythms for awhile in the Practice Room.

15.06 NOTES AND RHYTHM - You'll play *Rosebud* in the ostinato rhythm with the metronome turned on. If you have trouble, work on *Rosebud* in the Practice Room using the *Practice Notes* option.

15.07 TREBLE STAFF FINALE - The Miracle is your invisible left hand as you perform *Rosebud*. By now, playing with accompaniment should be easier, but if you have trouble, repeat Lesson 15.06 until you can play the piece smoothly.

Section 16
Ledger Lines on the Bass Staff

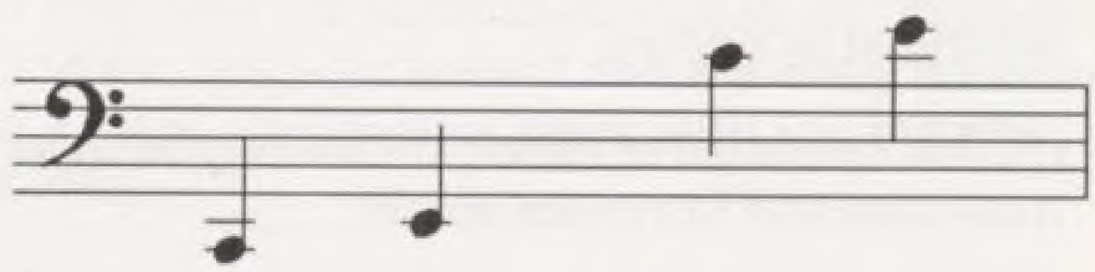
What You'll Discover

Section 16 contains nine Lessons. In these Lessons, you'll learn:

- How to play on ledger lines above and below the bass staff
- How to *count in thirds*
- How to play *Chords*

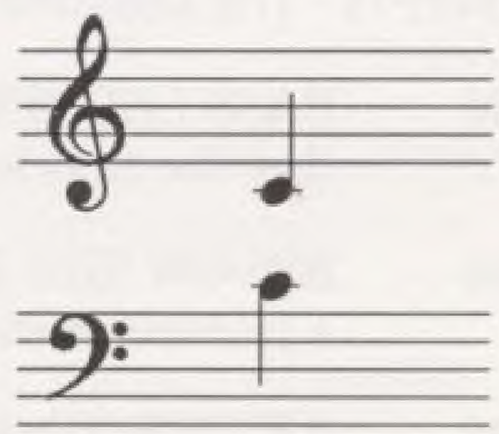
Ledger Lines on the Bass Staff

Ledger lines on the bass staff work in the same way as they do on the treble staff.



Bass Staff Ledger Lines

Two ledger lines above and below the bass staff are sufficient to represent the notes on the Miracle keyboard. The two ledger lines above the bass staff represent Middle C and the E above Middle C. The two ledger lines below the bass staff also represent C and E, but two octaves lower. In fact, the C is the lowest note on your Miracle keyboard.



Middle C on Treble and Bass Ledger Lines

Note that the ledger line for Middle C on the bass staff *does not* appear at the same location on the notation as the Middle C for the treble staff. Don't let this confuse you. The note is the same. Middle C is always Middle C.

Counting in Thirds

Playing ledger lines often involves *counting up from the staff* and *counting down from the staff* in thirds. In fact, it is so common that reading music becomes easier if you master counting up and down in thirds from any given note.

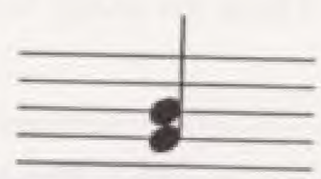
You should recall that a third is the distance between two lines on the staff.

Try practicing counting in thirds away from the keyboard. To do this, choose a note and then try to count three thirds up and then three thirds down. For example, if you choose *G*, going up you would get *G-B-D-F* and going down you would get *G-E-C-A*. Try it starting with *D*, *B*, or *E*.

Chords

A *Chord* is two or more keys pressed at the same time. In notation, they appear as two or more notes stacked on top of each other.

In this Section, you'll play the bass line to a piece written for the Miracle course entitled *Bull Frog*. This bass line combines single notes and two-note chords (sometimes called *Double-Notes* by musicians). The notes of each chord in *Bull Frog* are separated by a third.



Two Note Chord

Chords composed of thirds are among the most common types of chords used in American and European music.

Section 16 - The Lessons

16.01 BASS LEDGER LINES - Introduces ledger lines above the bass staff. Keep in mind that the first ledger line above the bass staff is Middle C.

16.02 BELOW THE BASS STAFF - Introduces ledger lines below the bass staff. Watch for a previous accidental in the second measure of the second screen.

16.03 REVIEW TIME! - Flashcard quiz on counting in thirds and on ledger lines on the bass staff.

16.04 INTRODUCTION TO CHORDS - Introduces the fingering of chords. Note that when the Miracle indicates the finger number for a left hand chord, it displays only the number for the lowest pitched note on the staff. For example, if you have a chord made up of a *C* and an *E*, the Miracle just displays the finger number to use for the *C*. The Miracle displays the number of the highest pitched note for right hand chords.

16.05 DUCK CHORDS - Practicing chords in the Shooting Gallery.

Note: In standard notation, when a note is two ledger lines above or below the staff, both ledger lines appear. In the Shooting Gallery, however, only the ledger line that the duck swims across is displayed. This helps you get a feel for the interval (distance) between notes on the ledger lines and notes on the staff.

16.06 THE WHOLE ENCHILADA - Rhythm practice tapping out the ostinato rhythm to *Bull Frog*. Note that the activity displays the blue rhythm lines *below* the beat numbers. This indicates that the rhythm is for the left hand.

If you have problems, remember to tap once for beats *1* and *3*, and twice for beats *2 and 4*.

16.07 BASS LEDGER LINES - Pitch practice with the bass line of *Bull Frog*. The metronome is turned off. Notice that there is no bar line at the end of either set of staffs. This means that the measure for the first set *continues* on the second set of staffs, and the measure for the second set continues on the next screen. Keep this in mind when playing that first note on the second set of staffs. Because the previous accidental rule applies, that note is really an E♭.

Note: In standard notation (such as that used in *Sheet Music* activities), measures are not broken between staffs.

16.08 PITCH & RHYTHM - Playing *Bull Frog* with the metronome turned on. Remember to play one note for beats *1* and *3* and two notes for beats *2* and *4* of every measure. If you have problems, work on *Bull Frog* in the Practice Room until you can play both the rhythm and the pitch smoothly.

16.09 OSTINATO & ORCHESTRA - The Miracle provides full accompaniment to your performance of the *Bull Frog* bass line. You'll discover that the Miracle is capable of making quite an interesting variety of sounds.

Section 17
Imitating Rhythms

What You'll Discover

Section 17 contains three Lessons. In these Lessons, you'll learn:

- What *imitative pieces* are, and how to play them

Imitative Pieces

An *Imitative Piece* is a unique type of music, usually involving two musicians. One musician plays a sequence of notes with a particular rhythmic pattern, then the other musician plays a sequence of equal length, using the same rhythmic pattern. In many cases, the sequences also have identical melodies.

Imitative pieces can by played on a piano by one person by playing the odd measures with the left hand and the even measures with the right.

Playing Imitative Pieces

Imitation pieces can sometimes be tricky to play, because the rhythm of each set of measures might be different from the set before it. A good way to keep in rhythm is to count the beats. For example, if the piece has four beats to a measure, count "1-2-3-4" for each measure.

To be effective, you must count during every measure, whether you are playing in that measure or not.

Section 17 - The Lessons

17.01 IMITATIVE RHYTHMS - Rhythm practice tapping out an imitative piece. When the green pointer is on a rest, the Miracle taps Middle C to the rhythm that you will play in the next measure. The Miracle is pretty picky for this Lesson, so play exactly what you heard, and keep an eye on the pointer. It provides a visual clue to when you're supposed to play.

17.02 THE NOTES - Pitch practice on the notes that go with the rhythms in Lesson 17.01. The fingering is pretty easy, but soon you'll be playing it with some tricky rhythms. Make sure you can play the piece smoothly.

17.03 DUELING PIANOS - It's you versus the Miracle as you combine the rhythms and pitches from the previous two lessons together. The challenge is to play *exactly* the notes and rhythms that you hear.

Section 18
More Imitative Music

What You'll Discover

Section 18 contains three Lessons. In these Lessons, you'll learn:

- How to play an imitation piece in which the rhythms are imitated, but the notes are different.

Notes and Rhythms

Earlier, we told you the Miracle Equation:

Notes + Rhythm = Music

This equation sounds very simple, and the concept of it is. The hard part is putting the equation into practice. It's like playing a new Nintendo game. It's easy to understand, but at first it takes a little practice to play it well.

This Section concentrates on building your skill at the Miracle Equation. You'll learn to recognize a beat pattern, and then apply it to notes of different pitch.

Later, when you learn to read rhythms in notation, you'll be able to apply the skills you've gained here to help you quickly learn any piece.

Section 18 - The Lessons

18.01 MORE IMITATIVE PIECES - Rhythm practice with imitative music. Don't be misled by the Miracle playing different pitches than the Middle C's that you play. Concentrate on extracting the rhythms. You'll work with the pitches later. Incidentally, these rhythms are a bit trickier than the ones in Section 17, so don't worry if it takes a few tries to get it right.

18.02 HERE ARE THE PITCHES! - Pitch practice with the notes that you'll later combine with the rhythms you just learned. The hand positions aren't too hard, but some of the pitches try to throw a curve at you. Make sure you don't forget about the *previous accidental rule.*

18.03 MIRACLE MADNESS - You'll combine the rhythm from Lesson 18.01 with the pitches from Lesson 18.02. Don't let the Miracle throw you off. The pitches it plays in its measures are *different* from the pitches that you play in yours. Just make sure you imitate the same rhythm.

Section 19
Two-Handed Playing

What You'll Discover

Section 19 contains six Lessons. In these Lessons, you'll learn:

- How to play with two hands
- What *Parallel Motion* and *Contrary Motion* are

Playing with Both Hands

Playing with two hands is not nearly as confusing as it might first seem. In many things you do every day, your hands do two different things at once. When playing most Nintendo games, for example, your left hand is doing something with the arrow keys while your right hand switches back and forth between the "A" and "B" buttons.

Playing with both hands is very similar. It takes a little while to get coordinated, and then becomes relatively easy.

Parallel vs. Contrary Motion

As you know, music forms patterns of rising and falling motion. In two-handed pieces, the bass line and the melody each have their own pattern. These patterns may be similar, in that both bass line and melody rise and fall at the same time, or they may be dissimilar. The melody might rise while the bass line falls, for example.

Parallel Motion describes those times when the bass line and melody rise and fall at the same time.

Contrary Motion describes those times when the bass line rises while the melody falls, or vise-versa.

Frequently, the bass line and melody of a piece will display examples of both parallel *and* contrary motion.

In this Section, you'll play pieces of all three types. The pieces may take some getting used to, so don't get discouraged if it takes a while to get the hang of it. You're giving yourself a real workout, training your mind and your muscles to move together in a new way. With a little time and practice, you'll get it right.

Section 19 - The Lessons

19.01 PLAYING WITH TWO HANDS - Introduction to playing with both hands. You play a piece that is completely in parallel motion. In fact, the left and right hands do *exactly* the same thing, but one octave apart.

19.02 WITH THE METRONOME - You'll play the parallel motion piece from Lesson 19.01 with the metronome turned on. Even though you'll only play one note per beat, it may take a while to get the hang of it. Practice until you can do it smoothly.

19.03 CONTRARY MOTION - Introduction to playing pieces with contrary motion. Each hand uses only one hand position, and they are exactly an octave apart. Since the contrary motion starts on the same finger, both hands will use the same finger throughout the piece. If you use the thumb on one hand, you'll use the thumb on the other. Don't forget to check the key signature.

19.04 CONTRARY WITH METRONOME - You'll play the contrary motion piece from Lesson 19.03 with the metronome turned on.

19.05 2-HANDS, 2 POSITIONS - You'll play *Chimp*, a piece that combines both parallel and contrary rhythms. The left hand remains in the same hand position throughout the piece, but the right hand changes position several times. Be careful not to move the left hand when you move the right hand!

Many people find that this lesson takes a bit more practice than most of the others. If you have trouble, go to the Practice Room and play *Chimp* using the *Practice Notes* option. First, practice the left hand part only. Then practice the right hand part only. When you can play both smoothly, give it a try monkeying around with both hands.

19.06 ...WITH METRONOME - You'll play *Chimp* with the metronome turned on.

Section 20
Time Signatures

What You'll Discover

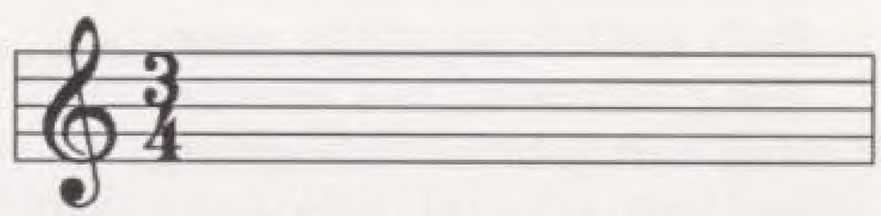
Section 20 contains seven Lessons. In these Lessons, you'll learn:

- What *Time Signatures* and how to read them
- What *Common Time* is and what makes it so common
- What *half notes* are and how to read them on the staff

Time Signatures

In Sheet Music and Rhythm Practice Activities, you've probably noticed the two large numbers that appear in the first measure of every piece. These numbers together are called a *Time Signature* and they tell you two things.

The upper number tells you how many beats there are in a measure. For example, a "3" means three beats per measure while a "4" means fours beats per measure. The upper number is also the number of lead beats to use before starting the piece.



3/4 Time Signature

The lower number tells you what kind of note equals one beat. A "2" means every half note gets a beat. A "4" means every quarter note gets a beat. An "8" means every eighth note gets a beat.

Pronouncing Time Signature Names

Although they look like fractions, time signature names aren't pronounced like fractions. Instead, you say the top number and then say the bottom number. For example, "3/4" is pronounced "three-four time." That time signature, incidentally, means that there are three beats to a measure, and each quarter note gets one beat.

Time Signatures Affect Rhythm

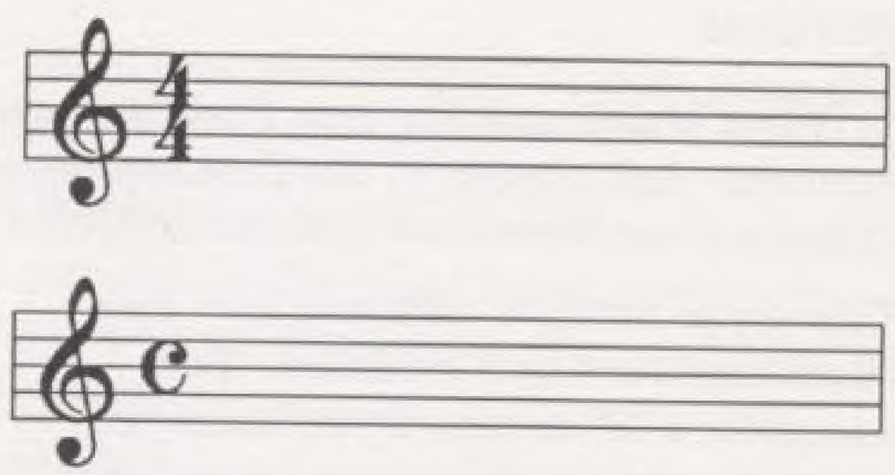
Different time signatures change the *feel* of the rhythm in a piece. All waltzes, for example, have the same rhythmic feel to them. This is because all waltzes are in 3/4 time. So are polkas.

Marches, such as Sousa's *Stars and Stripes Forever* are always in 4/4 time. This time signature provides a steady, even numbered beat which is easy to march to. Most Rock & Roll songs are in 4/4 too.

Common Time

By far, 4/4 time is the most commonly used time signature. As a result, 4/4 is often referred to as *Common Time.*

In notation, the time signature for common time sometimes appears on the staff as *4/4* and other times as a large letter *C*. Both symbols mean the same thing: four beats to a measure with each quarter note getting one beat.



Common Time

Half Notes

Half Notes are notes that are played *twice* as long as quarter notes. On the staff, they look like hollowed-out quarter notes.

In common time, each half note lasts two beats.

Half Note

Chopsticks

In this Section, you'll play the first part of *Chopsticks*, a piece in 3/4 time with both half notes and quarter notes. This part of *Chopsticks* makes extensive use of contrary motion.

Chopsticks was first published in England in 1877 as *The Celebrated Chop Waltz*. The French call the piece *Cotelettes* which means *Cutlets.*

The traditional way to perform *Chopsticks* breaks all known rules of piano playing: it's usually performed with just two outstretched fingers!

However, you won't play it that way here. The Miracle's *Chopsticks* is a little different from the traditional version. In this *Chopsticks*, the bass line is played an octave lower. This results in a fuller sound than the traditional version, which gets emphasized when the Miracle Orchestra joins you later on for a performance of both halves of the piece.

You'll get to the rest of *Chopsticks* in Section 21.

Section 20 - The Lessons

20.01 CHOPSTICKS - Right hand note practice for the first part of *Chopsticks*. Notice that there is only one hand position for this part of the piece.

20.02 TIME SIGNATURES - Introduces Time Signatures. Because the top number in the time signature is a 3, you know that there are three beats per measure. You also know you should expect 3 lead beats when you start the piece. Count "1-2-3" for each measure. Counting is important for several reasons:

1) It helps you keep in tempo
2) It helps you to figure out both simple and complicated rhythms
3) It helps you keep track of where you are in the piece.

20.03 LEAD BEATS QUIZ - Flashcards quiz you about time signatures.

20.04 CHOPSTICKS - LEFT HAND - You'll play the left hand part of *Chopsticks* with the metronome turned on. This activity challenges you to play the notes and rhythm without practicing the notes first. Keep in mind that there's only one hand position.

If the rhythm goes too quickly, you can still *Practice Notes* on this piece in the Practice Room. But see if you can *sight read* the piece correctly the first time through.

20.05 TWO-HANDED CHOPSTICKS - You'll play the first part of *Chopsticks* with both hands. Don't forget that there is only one hand position for each hand.

While playing, try to pick out how your hands move in relation to one another. Notice how your hands move in parallel motion in measure six, and contrary motion in measure eight. Recognizing patterns like this will make it easier to play with both hands.

20.06 HALF NOTES - Introduces half notes as you get tapping practice for the next part of *Chopsticks*. Tap with your right hand only, and remember that half notes last for *two* beats.

20.07 REVIEW - Flashcard quiz on half notes. The third question is particularly tricky. Keep in mind the following when trying to figure it out:

1) There are three quarter notes to a measure in 3/4 time.
2) A half note lasts *twice* as long as a quarter note.
3) A quarter note lasts *four times* as long as a sixteenth note.

Section 21
Chopsticks Revisited

What You'll Discover

Section 21 contains six Lessons. In these Lessons, you'll learn:

- How to play *Quarter Note Rests*
- What a *Coda* is
- How to play the remainder of *Chopsticks*

Quarter Note Rests

As you've already learned, *rests* are moments of silence in music. A *Quarter Note Rest* (also called a *Quarter Rest*) is a moment of silence that lasts as long as a quarter note.

Quarter Rest

In the *finale* of *Chopsticks*, you'll see several quarter note rests.

Codas

The finale of a piece or major section of a piece is called its *Coda*, which means *tail* in Italian. Codas generally use a pattern of notes or rhythms that is different from the rest of the piece, in order to create an impression of finality.

The length of Codas vary from piece to piece. They may be many measures long, or just a few. Some pieces have no Coda at all.

The coda to our version of *Chopsticks* is seven measures long.

Section 21 - The Lessons

21.01 MORE CHOPSTICKS - You'll play the next part of the middle part of the *Chopsticks* bass line with the metronome turned on. Pay special attention to the fingering so that you don't run out of fingers. Put your thumb on *G* as it goes down from *C* in the opening.

21.02 STILL MORE CHOPSTICKS - You'll play the middle part of *Chopsticks* with both hands. The metronome is turned off to let you concentrate on the fingering. Notice that all but the last four measures are in parallel motion.

Make sure you learn the correct fingering now, so that you can play smoothly when the metronome is turned on.

21.03 EVEN MORE CHOPSTICKS - You'll play the middle part of *Chopsticks* with the metronome turned on. If you have trouble, go back to Lesson 21.02.

21.04 QUARTER NOTE RESTS - Introduction to Quarter Note Rests. You'll play the Coda (ending) of *Chopsticks* in which the left and right hands play an imitative rhythm.

21.05 COMPLETE CHOPSTICKS - You'll play *Chopsticks* in its entirety. Be ready to repeat most (but not all) of the first part, after playing the middle section. This repeated section goes right into the Coda.

21.06 CHOPSTICKS AND ORCHESTRA - A performance of *Chopsticks* with accompaniment from the Miracle. You've probably never heard *Chopsticks* like this before!

Section 22
Fun with Notes and Rests

What You'll Discover

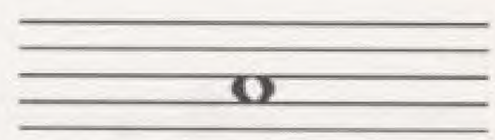
Section 22 contains six Lessons. In these Lessons, you'll learn:

- What *Whole Notes* are, and what they look like.
- What *Half Note Rests* and *Whole Note Rests* are
- What a *Sequence* is

Whole Notes

Whole Notes are notes that are played *four times* as long as a quarter note. They are called whole notes because they have the longest duration of any normal note in piano music.

Because whole notes are the longest, all of the other notes are named in relation to whole notes. That is why notes that are played half as long are called *half notes* and notes that are played a quarter as long are called *quarter notes*.



Whole Note

Whole notes appear on the staff as a hollow circle. In 4/4 time, they take up an entire measure by themselves.

Larger Than the Whole

Although whole notes are the longest note used with the piano, there actually *are* notes of longer duration.

A *Double Whole Note* is a note played twice as long as a whole note. These notes appear rarely, and only in music with very unusual time signatures such as 4/2 time. Orchestral scores or contemporary avant garde pieces may occasionally use time signatures of this type. Traditionally, however, such time signatures are not used for the piano.

Half and Whole Note Rests

A *Half Note Rest* (also called a *Half Rest*) is a moment of silence that lasts as long as a half note. It appears in notation as a short horizontal line that sits *on top* of the center line of the staff.

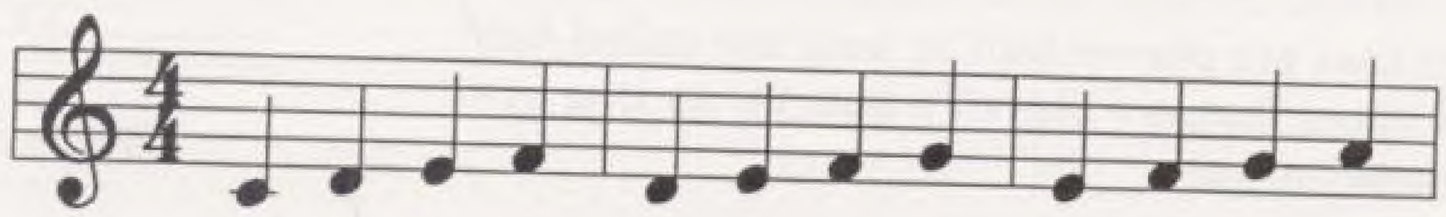
Half Rest

A *Whole Note Rest* (also called a *Whole Rest*) is a moment of silence that lasts as long as a whole note. It appears in notation as a short horizontal line that hangs under the fourth line on the staff. Whole note rests are slightly wider than half note rests.

Whole Rest

Sequences

A *Sequence* is a pattern of notes *and* rhythm that repeats three or more times with each repetition beginning one note higher or lower than the previous. For example, a sequence of quarter notes might be C-D-E-F for the first repetition, D-E-F-G for the second, and E-F-G-A for the third.



Example of a Sequence

There is no maximum number of notes in the pattern of a sequence, nor is there a limit on the number of repetitions.

The ability to recognize sequences (or any other type of musical pattern) helps make reading and playing pieces easier.

Section 22 - The Lessons

22.01 MORE SYMBOLS - Introduction to whole notes and half rests. You'll play the right hand part of *Space Cadet* with the metronome turned on. Note that the music on the second screen contains a four note sequence.

22.02 ...LEFT HAND - You'll play the right hand part of *Space Cadet* with the metronome turned on. Notice the sequence of half notes on the second screen.

22.03 NOTE REVIEW - Flashcard quiz on notes and rests.

22.04 ...BOTH HANDS - Practice playing *Space Cadet* with both hands. The metronome is turned off, but try to play in rhythm as best you can. Watch out for the hand position changes on the second screen.

22.05 ...WITH METRONOME - Playing *Space Cadet* with the metronome turned on. Don't forget to raise your right hand during the rests. In the second measure, practice raising your right hand *exactly* when your left hand plays the second note.

22.06 SPACE CADET FINALE - The Miracle Orchestra joins you in a performance of *Space Cadet*. You'll hear the Miracle produce some interesting sounds on this one.

Section 23
Canon in D

What You'll Discover

Section 23 contains seven Lessons. In these Lessons, you'll learn:

- What eighth notes look like in staff notation
- What *Beams* are, and how they relate to eighth notes
- What *Counterpoint* is
- What a *Theme* is
- What a *Canon* is, and how it relates to Theme
- How to play Pachelbel's *Canon in D*
- How to move to hand positions farther than your reach

Reading Eighth Notes

Eighth notes appear on the staff as a quarter note with a small *flag* at the end of the stem.

These flags work well for single notes, but not as well when several eighth notes appear one after another. With a lot of flags, the notation becomes crowded and hard to read. The solution is to use beams.

Eighth Note

Beams

When two eighth notes appear together, their flags are replaced by a thick line that connects the two stems. This line is called a *Beam*.

Whenever you see two or more notes beamed with a single line, play eighth notes.

Beamed Notes

Contrapuntal Music

Contrapuntal literally means *in counterpoint*, or *in opposition to*. In music, it refers to playing two or more entirely independent parts (melody line, bass line, etc.) at the same time. This kind of hand independence is a skill that improves with experience.

The best way to learn contrapuntal pieces is to get a *feel* for the separate movements of each hand. Do this by practicing separately with each hand until the movements become automatic.

Theme

A *Theme* is the main melody of a piece, for which the piece is known and recognized. Usually, the theme either starts the piece or is brought in after a brief musical introduction.

Television shows, for example, have *Theme* music which plays during the titles. If you've seen a show a few times, you can usually tell that it's on by just hearing this *Theme*.

Canons

A canon is a special type of Contrapuntal piece in which the theme of the piece is played by each of the parts, but at different times. Often, the two parts are a measure apart. Think of it as an imitative piece in which the first hand leads the other throughout the piece.

Canon in D

In this Section, you will play *Canon in D*, the most famous work of Johann Pachelbel. Pachelbel was a 17th century German composer and organist. Pachelbel was a personal friend of the Bach family, and taught the art of keyboard playing to Johann Christoph Bach. Years later, Johann Christoph taught these skills to his more famous baby brother, Johann Sebastian Bach.

Both Pachelbel and Bach lived during the *Baroque* period of music, which lasted from about 1600 through 1750. Other famous Baroque composers include Frederick Handel, Domenico Scarlatti and Francois Couperin.

Handling Long Reaches

Canon in D contains some challenging hand position transitions. In the bass line, there are transitions where it is impossible to reach the notes without physically lifting your hand from the keyboard. Keep the following in mind when making these reaches:

1) Stay as close as possible to the keys
2) hold the note you're moving from as long as possible. Wait until it's time for you to move to the next note.
3) Shift your hand to the next position, *aiming* for the correct note with the correct finger. Be careful to keep your wrist straight.

Section 23 - The Lessons

23.01 CANON IN D - LEFT HAND - Left hand note practice for *Canon in D*. Watch out for the two sharps in the key signature. Also, this piece has some very tricky hand positions. For some, you'll have to lift and move your hand. Practice connecting the notes as smoothly as possible.

23.02 CANON IN D - LEFT RHYTHM - You'll play the left hand part of *Canon in D* with the metronome turned on. Be prepared for the notes to get abruptly faster on the second screen as you switch from playing quarter notes to playing eighth notes. Anticipate the eighth notes by thinking "1-2" for each beat on the first screen.

23.03 CANON IN D - RIGHT HAND - Note practice for the right hand part of *Canon in D*. You'll notice that the music repeats quite a bit. The first three lines are identical. The chords on the second screen repeat on the third screen as well. When playing the chords, remember that the finger number is for the top note of the chord. Also, don't forget about the key signature.

23.04 CANON - RIGHT RHYTHM - You'll play the right hand part of *Canon in D* with the metronome turned on. Be patient and wait for the whole note rests at the beginning of the piece. It's not nearly as long as most orchestra members have to wait. Sometimes they have to count hundreds of bars before they come in!

Count "1-2" for each beat of the right hand too. That way the eighth notes on the second screen won't take you by surprise. Try to play the chords so that they flow together smoothly.

23.05 CANON IN D - PRACTICE - You'll play both parts of *Canon in D*, but with the metronome turned off. Putting both left and right hands together in any contrapuntal piece takes practice. Don't be concerned if it takes a while before you can play this smoothly.

While you're working on it, you might notice that the left and right hand switch parts when you get to the eighth notes. Your right hand plays what your left hand was playing and vise-versa. You might also notice that the melody in the first two-measures that the left hand plays is repeated in the piece no less than five times!

23.06 CANON IN D - FOR REAL - You'll play *Canon in D* with the metronome turned on. Take your time, and don't forget about the eighth notes on the second screen.

23.07 CANON IN D - FINALE! - The Miracle joins you in a final performance of *Canon in D*. You'll notice that the Miracle adds two more contrapuntal parts to the piece. This large amount of counterpoint is very typical of *Baroque* period music.

Section 24
Rockin' Keyboards

What You'll Discover

Section 24 contains six Lessons. In these Lessons, you'll learn:

- How to play and read *Eighth Note Rests*
- How to switch octaves.
- How different instruments affect the *feel* of music

Eighth Note Rests

An *Eighth Note Rest* (also called a *Eighth Rest*) is a moment of silence that lasts as long as an eighth note. It appears in notation as a symbol that resembles a fancy "7."

Eighth Rest

When you play rests, raise your arm and hand to lift your fingers from the keys. Try not to bend back your wrist, especially with longer rests. When you bend your wrist, you lose your ready position, which makes further playing more difficult.

Correct

Incorrect

Playing Rests

Multiple Octaves

Often, you will have to play music in different octaves with the same hand. These jumps between octaves should be prepared as early as possible. If there is a rest between the two hand positions, use the rest to move to the new position.

Frightnight

In this section, you'll play a Rock & Roll tune. The piece is called *Frightnight*, and has a spooky, Halloween-ish sound. Like most Rock tunes, *Frightnight* is in 4/4 time.

As you practice, you'll probably agree that it sounds spooky, but you may wonder where the *Rock* part is. You'll find out in the last lesson when the Miracle joins in. It's another example of how contrapuntal parts can come together to create interesting sounds.

Keyboards and Rock & Roll

Although keyboards are commonly used by Rock musicians today, this was not the case in the early days of Rock. Rock & Roll piano was considered to be a ridiculous notion until 1957 when keyboardist Jerry Lee Lewis topped the charts with *Whole Lot of Shakin' Going On* and *Great Balls of Fire.*

Today, most Rock & Roll keyboardists use synthesizers like the Miracle, capable of reproducing the sounds of dozens of instruments. However, several Rock performers still play piano exclusively.

Elton John holds the world record for attracting the largest live audience to a solo concert performance. This Rock pianist's July 1982 concert in St. Louis attracted over 750,000 fans.

Section 24 - The Lessons

24.01 EIGHTH RESTS - Introduces Eighth Note Rests. You'll tap the left hand rhythm to *Frightnight.* Don't forget to play the eighth notes shorter than the quarter notes.

24.02 LEFT HAND NOTES - You'll play the left hand notes to *Frightnight* with the metronome turned on. Learn the opening measure well—it's repeated eleven times throughout the piece! Also, be ready for the hand positions changes and the eighth notes that are on the second screen.

24.03 RIGHT RHYTHM - Rhythm practice with the right hand part of *Frightnight.* There are notes and rests of many different types here, so it may not be as easy as it looks. Thinking "1-2" for each beat will help you get in sync with the eighth notes.

24.04 RIGHT HAND NOTES - You'll play the right hand notes to *Frightnight* while the Miracle plays the left hand for you. Even though you don't have to play the left hand, try reading both parts. It's good sight-reading practice.

24.05 FRIGHTNIGHT - BOTH HANDS - You'll play both parts of *Frightnight.* Try to make it sound like it did in Lesson 24.04 when the Miracle played with you. During the parts with the familiar repeating left hand pattern, concentrate on your right hand so that you can anticipate the changes.

24.06 ROCK 'N ROLL MIRACLE - It's time to Rock & Roll! You'll play *Frightnight* as the Miracle jams with you. Be prepared to hear some pretty unusual sounds come out of your keyboard.

Section 25
Playing in 2/4 Time

What You'll Discover

Section 25 contains six Lessons. In these Lessons, you'll learn:

- How to play in 2/4 time

2/4 Time

2/4 Time (pronounced *two-four time*) means that there are two beats per measure, and that each beat equals one quarter note. In this Section, you'll play a piece written in 2/4 time that you'll probably recognize, *Twinkle, Twinkle Little Star*.

Twinkle, Twinkle

In this Session, you'll discover that *Twinkle, Twinkle Little Star* is not as simplistic as many people think. Our arrangement incorporates many different length notes and rests, as well as several chords.

Although usually thought of as a children's song, the version of *Twinkle, Twinkle Little Star* that we know today actually came from the film *Hats Off*, a 1936 musical starring Mae Clark and John Payne. The melody, however, is much older.

The most famous arrangement of the piece was as a set of twelve "variations" entitled *Ah, vous dirai-je, Maman*, (*Ah, I Will Speak of You, Mother*) published in 1778 by Wolfgang Amadeus Mozart.

Mozart

Mozart is often considered to be the most talented musician of all time. He learned to play at age four, and was giving professional concerts before royalty by age six. By age twelve, he was conducting full symphony orchestras. Even more amazing, Mozart was able to compose and play any type of music on demand.

It is said that a man once asked Mozart how to write a symphony. Mozart replied that the man was still very young, and should start with something easier, such as ballads. When the man pointed out that Mozart wrote symphonies at age ten, the composer replied "Yes, but I didn't ask how."

Mozart lived a short, but vibrant life, exhausting much of his non-musical energies on dancing, billiards, and more bawdy forms of recreation. He greatly enjoyed good company, and often entertained friends with a unique ability to talk backwards.

Mozart died of illness at age 35, but left behind over 500 published works, including dozens of symphonies, operas, musicals and songs.

Section 25 - The Lessons

25.01 TWINKLE, TWINKLE - You'll tap the rhythm parts for both hands of *Twinkle, Twinkle Little Star* at the same time. Use a note below Middle C for the left hand and a note above Middle C for the right. Since the piece is in 2/4 time, there are only two beats per measure, and only two lead beats before the piece begins.

25.02 LEFT TWINKLE - You'll play the left hand part of *Twinkle, Twinkle Little Star* with the metronome turned on. As you play quarter notes, hold them as long as possible before you raise your fingers for the next note. When you play the eighth notes and rests, raise your fingers for the second half of each beat.

25.03 RIGHT TWINKLE - You'll play the right hand part of *Twinkle, Twinkle Little Star* with the metronome turned on. Take note that the chords on the second screen are thirds. When fingering thirds, use every other finger. In other words, if the finger number says "5", use your pinky and middle finger. If it says "4", use your ring finger and your index finger. If it says "3", use your middle finger and your thumb.

25.04 TIME SIGNATURE REVIEW - A flashcard quiz on time signatures. Watch out for questions with more than one correct answer.

25.05 TWO-HAND TWINKLE - You'll play both parts of *Twinkle, Twinkle Little Star* with the metronome turned on. Don't forget the F♯ in the key signature when you get to the chords.

25.06 TWINKLE WITH ORCHESTRA - The Miracle accompanies you in a unique arrangement of *Twinkle, Twinkle Little Star.* It won't sound like a children's song to you this time!

Section 26
All That Jazz

What You'll Discover

Section 26 contains eight Lessons. In these Lessons, you'll learn:

- What *Ties* are and how they affect notes
- What *Dots* are and how they affect notes
- What *Syncopation* is and how it relates to *Jazz*

Ties

A *Tie* is a curved line that connects two or more notes of the same pitch. These *Tied* notes are played as a single note, lasting for the time it would take to play all of the notes separately.

For example, in 4/4 time, a quarter note tied to an eighth note is played as a single note lasting a beat and a half. Likewise, two eighth notes tied together are interpreted as a quarter note.

Tied Notes

Why Ties are Used

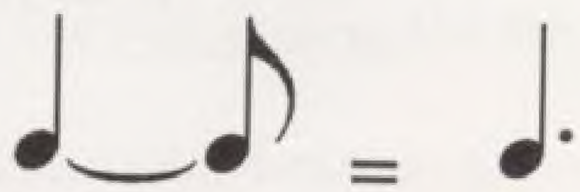
Tied notes enable composers to use notes of lengths for which there is no notational symbol. For example, there is no symbol for a note that is the length of a quarter note plus a sixteenth note. If a composer wanted to use such a note, he would write it as a quarter and sixteenth note tied together.

Tied notes are also useful when a composer wants to write a note that would exceed the length of a measure. For example, two tied quarter notes are used in place of a half note when the half note would appear on the fourth beat of a measure (in 4/4 time).

Dotted Notes

A *dotted note* is a note that is played for one-and-a-half times its normal length. A dotted half note is equal to a half note tied to a quarter note. A dotted quarter note is equal to a quarter note tied to an eighth note.

Dotted notes are often used instead of their tied equivalents to avoid cluttering up the score.



Dotted and Tied Notes

In this Section, you'll play a Jazz piece called *Channel 11* which uses both dotted and tied notes.

Jazz

Jazz is a uniquely American form of music that developed in the early 1900's from elements of *Blues* and *Ragtime*. Its style is often characterized by long improvisational solos and the use of *syncopation*, which is the playing of an accent (a short note) just before a beat. This accent literally interrupts the even flow of the rhythm, creating a livelier sound than you can get from playing a steady stream of notes.

Section 26 - The Lessons

26.01 ALL THAT JAZZ! - You'll tap out the right hand rhythm to *Channel 11*. There are several tied notes on the second screen, so the display may be a little confusing. For each set of tied notes, only one eighth note and the half note next to it are tied. Remember to hold the key down for the duration of both notes.

26.02 SYNCOPATION - Introduces the term *Syncopation* while you combine the notes and rhythm of the right hand part of *Channel 11*.

26.03 DOTTED NOTES - Introduces dotted half notes, while you tap out the left hand part of *Channel 11*. Play each dotted half note as if it were a half note tied to a quarter note.

26.04 QUIZ TIME - Flashcards quiz you about dotted notes.

26.05 LEFT HAND NOTES & RHYTHM - You'll play the left hand part of *Channel 11* with the metronome turned on. The *walking bass line* in this piece is very typical of Jazz, and is often played by on a Bass.

26.06 TWO HAND RHYTHM - You'll tap out the rhythm for both the left and right hand parts of *Channel 11*. Pay special attention to the rests.

26.07 CHANNEL 11 - TWO HANDS - You'll play *Channel 11* with the metronome turned on.

26.08 JAMMIN' ON CHANNEL 11 - The Miracle joins you in a final performance of *Channel 11*. As you play, try to notice the syncopations that the Miracle plays off-the-beat.

Section 27
Different Playing Styles

What You'll Discover

Section 27 contains six Lessons. In these Lessons, you'll learn:

- What *Touch* is
- What *Staccato* is, and how to play that way
- How to play three note chords
- More about recognizing patterns

Touch

Touch (sometimes called *Articulation*) refers to how the piano is played. Notes can be played softly or loudly. They can be played smoothly so that they seem to flow from one to the next, or they can be played crisply so that each note seems to have a life of its own.

Each of these *touches* has a name, so that a composer can indicate how his piece should be played.

Legato and Staccato

So far, you've concentrated on playing pieces smoothly, so that each note seems to connect to the next. This style of playing is called *Legato.*

Staccato is a touch in which the notes are *not* connected. Each note is short, crisp and bouncy. The sound from such a note stops before the next note begins.

In this Section, you will play *Toccata.* This 2/4 piece contains three notes chords that should be played in a staccato style.

Playing Three Note Chords

Fingering for three notes chords on the treble staff is simple. The notation tells you which finger to use for the highest note. For the lowest note, use your thumb. Use the finger that seems most comfortable to play the middle note.

When switching from one chord to another, aim for the correct note for your thumb. This gives you the most accuracy.

Looking For Patterns

Toccata contains several recognizable patterns that make learning the piece much easier:

1) Most of the single notes are the same notes that make up the chord that follows them.

2) During the measures with chords, the right hand pinky plays the same note as the left hand, but one octave higher.

3) The right hand holds the same chord fingering throughout the piece. Although different notes are played, the shape of the right hand can remain unchanged.

Section 27 - The Lessons

27.01 STACCATO TOCCATA - You'll learn the fingering to the right hand part of *Toccata*. Notice that the single notes are the same pitches as the chords that follow them.

27.02 TOCCATA RIGHT HAND - You'll play the right hand part of *Toccata* with the metronome turned on. Remember that you don't have to change hand positions for the first chord of each two chord set.

27.03 TOCCATA MELODY - You'll play the bass melody to *Toccata* with your left hand. You'll see some dotted quarter notes. Play these for the length of a quarter note *plus* an eighth note.

27.04 TOCCATA RHYTHM - Tapping practice for the left and right hand parts of *Toccata*. If the two different rhythms seem awkward at first, try breaking each beat down into the four possible combinations: rest, right (hand), left (hand), both (hands).

27.05 REVIEW - Flashcards quiz you about dotted notes, touch and chords.

27.06 TOCCATA TOGETHER - You'll play both parts of *Toccata* with the metronome turned off. This piece is much easier to play when you recognize the relationship between the hands. Notice how the top note of the right hand is almost always exactly an octave above the left hand note.

Section 28
Practice Makes Perfect

What You'll Discover

Section 28 contains ten Lessons. In these Lessons, you'll learn:

- How to bring all of the elements of playing together

Pulling It All Together

Learning piano is like learning to play a Nintendo game. First, you learn the rules and find out what buttons to press to do what you want. Then you start to play, although not nearly as well as your friend who bought the game months ago. As you play more and more, you gain the coordination to get past obstacles that were once difficult. Then you look for ways to do it easier and better.

Piano playing is very much the same. You've learned all about key signatures, time signatures, ledger lines, treble and bass clefs, accidentals, and the different lengths of notes from wholes to eighths. Now you need to coordinate all of the things together to form a piece of music.

Coordinating Two Hands

One of the trickiest things to coordinate when playing with both hands is changing hand positions accurately. When you move one hand to a new position, your body frequently wants to move the other hand too. Also, there are usually some stray fingers that don't want to get over the right keys. This is natural, and it takes practice to train your body to get the hang of it.

A good way to teach your hands to go where you want them is to be aware of what's happening at every moment in a piece. When your right hand moves, think "In this part my right hand moves and my left hand stays put."

When you are conscious of each moment, you are less likely to make a mistake. Then as you practice, your coordination improves. Eventually, independent movement of your hands becomes second nature.

Section 28 - The Lessons

28.01 PRACTICE AND PRACTICE! - You'll play the right hand part of an eight measure piece with the metronome turned on. You understand the symbols and the concept of counting. Now you must put those two together to learn how to sight read. Concentrate on reading the rhythm before reading the note. It's much easier to recover from playing the wrong note than it is to recover from losing the rhythm.

28.02 TWO HAND RHYTHMS - Tapping practice for the rhythms of both hands. This piece has a lot of different rhythms, making it challenging to play with both hands. Try to reduce the hand movement of each beat down to *rest*, *left*, *right* or *both*.

28.03 BASS CLEF PRACTICE - Left hand practice playing a piece with many different rhythms. Make sure to hold the half notes and whole notes for their full durations. On the second screen, you'll find places where the same notes are played one after another. Use times like these to look ahead in the notation and see what's coming up.

28.04 ALL TOGETHER NOW - You'll play both parts of the eight bar practice piece. The Miracle is very strict here about how you play the rests. Be sure to hold each note *exactly* its proper length.

28.05 TEST TIME - Flashcards quiz you about time signatures, note lengths and dotted notes.

28.06 YOU GOT RHYTHM - You'll tap out both parts to a different practice piece. This one has a slightly faster tempo. You should getting used to tapping with both hands, but that doesn't mean not to concentrate. Watch the pointer and think *rest*, *left*, *right* or *both*

28.07 MELODY LINE - Right hand note practice. There are some tricky hand positions here and a number of jumps, so keep track of where your fingers are.

28.08 MELODY IN TIME - The Miracle adds the bass line as you play the melody from Lesson 28.07 with the metronome turned on. Make sure to check the time signature so you know how many beats to count in a measure.

If you get behind, try to skip ahead to a later point in the notation and begin when the Miracle catches up with you. This is good practice for when you are performing with others. They won't stop just because you made a mistake.

28.09 SWITCHEROO - This time the Miracle adds the melody and *you* play the bass line. Be ready for a tricky transition at the end of the piece. You'll have to pass your hand *way over* your thumb to play it smoothly.

28.10 THE EIGHT BAR TEST - You'll play both melody and bass line for the eight bar practice piece from Lesson 28.07. To give you a chance to coordinate your hands, the tempo is slower than it was in the previous two lessons.

Section 29
Triplets

What You'll Discover

Section 29 contains five Lessons. In these Lessons, you'll learn:

- What *Triplets* are and how to play them
- How to gain *Finger Independence*

Triplets

Triplets are three notes played in the same time it would normally take to play two. They appear in notation as a set of beamed notes with a small "3" above the beam.

Triplets

Finger Independence

Finger Independence is the ability to move each finger independently of the others. It makes playing easier because each finger can hold its own. Without this skill, the movement of one finger reduces your ability to move the others.

Although it's a skill that improves with practice, everybody starts out with some degree of natural finger independence.

The exercises in this Section help you improve your finger independence. After completing this Section, use the exercises each day as a warm-up routine. Practice with each hand, and concentrate on the following:

1) Hold the *tied whole note* down throughout the exercise. Don't let your finger lift up.
2) Play the triplets evenly.
3) Keep the weight of your arm constant. Keep the same amount of weight on the weaker fingers as on the stronger ones.

Section 29 - The Lessons

29.01 TRIPLET EIGHTHS - You'll play triplets with the fingers of your right hand as your thumb holds down a whole note. Don't be concerned if it takes a while to get the timing right. Try thinking "1-2-3" for each beat.

29.02 FINGER BUSTER #2 - You'll play triplets with the fingers of your right hand as your pinky holds down a whole note. This exercise is a bit more challenging than Lesson 29.01. Keep practicing.

29.03 FINGER BUSTER #3 - You'll play triplets with the fingers of your right hand as your index finger holds down a whole note. You may discover that your pinky is stronger than you think. In fact, it actually has more natural finger independence than either your index or ring finger.

29.04 FINGER BUSTER #4 - You'll play triplets with the fingers of your right hand as your middle finger holds down a whole note. This exercise is the most challenging yet! Let's see how quickly you can get through it.

29.05 FINGER BUSTER #5 - You'll play triplets with the fingers of your right hand as your ring finger holds down a whole note. Although the transitions between your middle finger and pinky are tricky, most people find this easier than the exercise in Lesson 29.04.

Now for a real challenge: try these exercises with your left hand. Use the notes C-D-E-F-G. Just hold one of the fingers down and play triplets with the rest. Unless you are left-handed, you'll probably find that it takes the left hand a little longer to do what you want it to. Nevertheless, this hand needs to develop finger independence too. Make sure that it gets equal practice time!

Section 30
Long Live the King

What You'll Discover

Section 30 contains seven Lessons. In these Lessons, you'll learn:

- How to play *Hound Dog*

This Section introduces no new concepts. Instead, it presents a challenging piece to sharpen the skills that you already have. Make sure you can already play the music from all of the previous Lessons. If you have trouble, visit the Practice Room.

Hound Dog

Hound Dog was one of Elvis Presley's biggest hits, topping the charts in 1956 for eleven weeks. However, Elvis wasn't the first to record the song.

Hound Dog was first performed in 1953 by Willie Mae "Big Mama" Thornton. It was written by the songwriting team of Jerry Leiber and Mike Stoller, who after *Hound Dog*, went on to write many hits for The Coasters, The Drifters and, of course, Elvis.

Elvis

Elvis Presley, also known as *The King*, was known for both his lively, blues-influenced Rock and his provocative stage presence. Although Elvis' popularity with teenagers was enormous, parents and clergymen despised him. A frustrated parent who owned a gas station in Texas would give away Presley records so that motorists could enjoy smashing them.

Because of Elvis' image, television host Ed Sullivan initially refused to allow the performer to appear on his show. He changed his mind, however, when an Elvis appearance on a competing show took away 85% of Sullivan's audience.

Section 30 - The Lessons

30.01 HOUND DOG! - You'll use your left hand to tap out the bass line rhythm to *Hound Dog*. Don't forget to play the tied eighth and quarter notes as a single note. That note is a syncopated note, since it starts between two beats.

30.02 RIGHT RHYTHM - You'll use your right hand to tap out the melody to *Hound Dog*. Don't forget to lift your hand for the rests. Also, watch for the eighth notes that start on line two. After the syncopated pattern on the first line, they come as a surprise.

30.03 HOUND DOG BASS - You'll play the bass line of *Hound Dog* with the metronome turned on. The Miracle plays the right hand part for you. You'll notice that the two hands quickly develop very diverse rhythms. Don't let the Miracle distract you.

30.04 HOUND DOG MELODY - You'll play the melody of *Hound Dog* with your right hand, while the Miracle plays the bass line with the left. If have trouble, go to *Hound Dog* in the Practice Room, select *Right Hand*, and choose *Practice Notes*.

30.05 RHYTHM CHECK - You'll tap out the rhythm of *Hound Dog* with both hands. Be ready for the second line of screen three—the tied eighth notes could be confusing! If you have problems, select *Listen to the Piece* from the Options Menu to get a better idea of how it all fits together.

This is a challenging piece to tap. Don't get discouraged if it takes a while to get it. Be patient and repeat the lesson until you can do smoothly. You may even want to divide your practice into two or three sessions.

30.06 HOUUUND DAWG PRACTICE - You'll play both the melody and the bass line to *Hound Dog* with the metronome turned on. If you have trouble, select *Practice Notes* for "both hands" in the Practice Room.

As you work with this piece, the Miracle will have you play it at a number of tempos. You'll discover that slow practice can really pay off.

30.07 MIRACLE ELVIS - The Miracle joins you in a Rockin' performance of Hound Dog. Make *The King* proud!

Section 31
Broken Octaves

What You'll Discover

Section 31 contains eight Lessons. In these Lessons, you'll learn:

- What *Broken Octaves* are and how to play them
- How to play *Sixteenth Notes*

Broken Octaves

Broken Octaves are patterns of notes that alternate back and forth between two octaves. These patterns are common to bass lines.

Play Broken Octaves with the thumb and pinky. Try to keep your pinky straight and your thumb hooked slightly inward. Also, make sure your knuckles do not collapse. This strengthens your fingers and provides more control.

While playing, use finger pressure rather than hand movement to strike the keys. Try to avoid rotating your wrist excessively.

Sixteenth Notes

Sixteenth Notes are the fastest notes you'll play in this course. As you know, their duration is only one-fourth as long as a quarter note.

In staff notation, sixteenth notes look like eighth notes with two flags coming from the stem. Sixteenth notes are usually beamed in groups of four, or in a group of two plus an eighth note. When beamed, two thick lines connect the sixteenth note stems.

Sixteenth Notes: Single and Beamed

Technotron

In the Section you'll play *Technotron.* This Rock piece, written especially for the Miracle Course, combines a Broken Octave bass line with a melody containing short sixteenth note bursts.

The sixteenth notes in the beginning of the piece are challenging. Don't hesitate to take a trip to the Practice Room.

Section 31 - The Lessons

31.01 TECHNOTRON - You'll play the bass line to *Technotron* with the metronome turned on. Most of the left hand part is easy because it is so repetitive. However, be ready for the two tied eighth notes. Shift your hand position down and make sure to keep the pinky straight. Strike the key with the tip of your finger to avoid mistakes.

31.02 SIXTEENTH NOTES - The Miracle demonstrates the rhythm of *Technotron*. Use this demonstration to familiarize yourself with the sound of the piece. Listen carefully to the passage with the ties and dotted notes.

31.03 YOUR TURN - You'll tap out the right hand rhythm to *Technotron*. Getting the sixteenth notes right might take a little practice. The first note you hear should be a high note. If not, it means you've started late.

31.04 TECHNOTRON: THE NOTES - Pitch practice for the right hand part of *Technotron*. Pay close attention to the finger numbers. Notice that your hand can stay in the same position for each sixteenth note group. Practice until you can play this smoothly.

31.05 TECHNOTRON: RIGHT HAND - You'll play the right hand part of *Technotron* with the metronome turned on. The Miracle joins in on the bass line. The chords in the middle section have almost identical spacing. Hold your fingers in a fixed position when playing them.

31.06 TECHNOTRON: BOTH HANDS - You'll play both the melody and the bass line of *Technotron* with the metronome turned off. This is perhaps the most useful Lesson in this Section. If you practice until you can play it smoothly, playing the piece in rhythm will be easy.

31.07 TECHNOTRON TRIAL - You'll play both parts of *Technotron* with the metronome turned on. The tempo is slow for the first time through. If it gives you trouble, you probably didn't practice Lesson 31.06 long enough. Go back to that Lesson and practice until it seems easy.

31.08 TECHNOTRON - The Miracle accompanies you in a final performance of *Technotron*.

Section 32
Using the Foot Pedal

What You'll Discover

Section 32 contains six Lessons. In these Lessons, you'll learn:

- How to use the Pedal to achieve special effects.

Foot Pedals

Modern pianos have either two or three foot pedals.

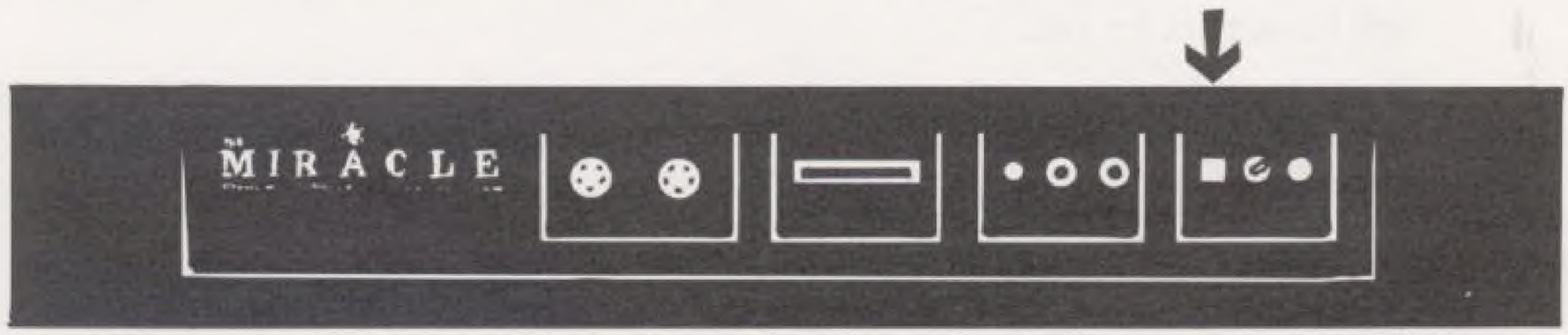
The left pedal is called the *Una Corda* or *soft pedal.* When this pedal is pressed, the piano puts out less volume.

If a middle pedal is present, it is the *Sostenuto* or *sustain pedal.* This pedal sustains the sound of the note being played beyond the time when the finger is lifted from the key. Only notes being played when the pedal is first pressed are affected. There is no effect on notes played *while* the pedal is pressed. Musicians often use this pedal to sustain a single note or chord while switching to a distant hand position.

The right pedal is the *Damper* or *loud pedal.* While this pedal is down, any note played is sustained until the pedal is released. This enables musicians to blend sounds together, creating an effect that cannot be duplicated by any other instrument. For this reason, the Damper is often considered the most important pedal on the Piano.

The Miracle Pedal

The pedal that comes with the Miracle functions as a Damper pedal. Connect it by plugging it into the "Foot Pedal" jack on the back of the Miracle keyboard. Either hole on the connector can plug into either pin.



Location of the Foot Pedal Jack

Using the Damper

The key to using the Damper pedal is knowing when to use it and how long to hold it down. The latter is very important. If the pedal is not held long enough, the notes fail to flow together. If held too long, the sound becomes muddy and generally unpleasant.

Developing the skill of knowing exactly when to press and raise the Damper pedal requires both practice and experience. The Lessons in this Section get you started.

Greensleeves

In this Section, you'll play a well-known English carol, *Greensleeves.*

The exact origin of *Greensleeves* is not known. The earliest reference to it is in a 1580 English publication which also lists the song as the *New Northern Ditty.*

Greensleeves was apparently quite popular in its day. Fully twenty years later, William Shakespeare mentioned it in his play, *The Merry Wives of Windsor.*

Over the years, many different sets of lyrics have been written to the tune of *Greensleeves.* During a period of civil war in England, the melody was used for a political rallying song. The Christmas carol, *What Child Is This?* is another case of alternate lyrics.

The Beatles used *Greensleeves* without lyrics to provide counterpoint during the coda of their hit, *All You Need Is Love.*

Section 32 - The Lessons

32.01 GREENSLEEVES - You'll use both hands to tap out the rhythm of *Greensleeves.* At this point in the course, you'll have to play the rhythm perfectly to get through the Lesson. Make sure you pay extra attention to the tied notes and the rests.

32.02 USING THE PEDAL - Introduction to using the Damper pedal. You'll practice pedaling while playing the right hand part of *Greensleeves.* The Miracle adds the left hand part for you.

If you have trouble coordinating your foot with your hand, practice with only your hand until you know the piece. Then, work on adding the pedal change at the beginning of each measure.

32.03 MORE PEDAL WORK - You'll play the left hand part of *Greensleeves* while the Miracle plays the right. Don't forget to pedal at the start of each measure.

32.04 GREENSLEEVES - PRACTICE - You'll play both parts of *Greensleeves* with the metronome turned off. The many flats in the key signature makes this a fairly tricky piece, so take your time and practice until you can play it smoothly. Watch for the B♭'s and E♭'s, and be prepared for tricky fingering on the double notes in the middle of the piece.

32.05 GREENSLEEVES SLOWLY - You'll play both parts of *Greensleeves* at several different tempos.

32.06 WITH ORCHESTRA... - The Miracle joins in to accompany you in a performance of *Greensleeves.*

Section 33
My Funny Valentine

What You'll Discover

Section 33 contains fifteen Lessons. In these Lessons, you'll learn:

- How to play *My Funny Valentine*

This Section presents a challenging piece to sharpen your skills. Make sure you can already play the music from all of the previous Lessons. If you have trouble, visit the Practice Room.

Expressive Melodies

In this Section, you'll play a Broadway show tune called *My Funny Valentine.* The song has an expressive, slow melody that makes it an ideal solo piece for the piano.

Pieces with expressive melodies should be played *Legato.* As you may recall, this means to play smoothly so that notes seem to flow from one to the next.

My Funny Valentine

My Funny Valentine was written for the 1937 Broadway musical *Babes in Arms.* The show featured a cast of children, including 15-year-old Broadway newcomer Alfred Drake, who went on to become one of Broadway's best-known actors.

The song was written by Broadway composer Richard Rodgers. The play was written by Rodgers in collaboration with friend and lyricist Lorenz Hart. Over a twenty-four year association, Rodgers and Hart achieved great success writing musical comedies.

Rodgers teamed up with Oscar Hammerstein II following Hart's death in 1943. This new team produced a tremendous string of hit musicals, including *Carousel*, *South Pacific*, *Oklahoma!*, *The King and I*, and *The Sound of Music.*

Section 33 - The Lessons

33.01 MY FUNNY VALENTINE - The Miracle demonstrates *My Funny Valentine.* Listen carefully to get a feel for the piece.

33.02 YOUR FUNNY VALENTINE - You'll play the bass line to the first half of *My Funny Valentine* while the Miracle plays the melody. Use the Damper pedal and change on the first and third beat of every measure.

There are a number of recognizable patterns in the bass line. Notice that the first note of every measure is the lowest and the third note of every measure is the highest. Also notice that the first note of every measure is a half step lower than the first note of the previous measure. This type of pattern is called a *Chromatic Bass Line*, and is frequently used to add *feeling* to a piece.

33.03 RIGHT HAND NOTES - Right hand pitch practice for the first half of *My Funny Valentine*. When playing the thirds (the two-note chords), remember that the finger number applies to the top note. The other finger should be the one that is two fingers away. For example, if the finger number is "5", use your pinky and middle finger.

33.04 RIGHT HAND IN TIME - You'll play the melody to part one of *My Funny Valentine* while the Miracle plays the bass line.

33.05 MY FUNNY TWO HANDS - Two-handed pitch practice for the first half of *My Funny Valentine*. The most challenging parts are the jumps between distance hand positions. Before making the jump, make sure you know where you are jumping to and what finger you need to use.

33.06 IN TIME, WITH PEDAL - With both hands and pedal, you'll play part one of *My Funny Valentine* with the metronome turned on. Make sure to make the pedal changes on the first and third beat of every measure.

33.07 VALENTINE - PART II - You'll tap out the left hand rhythm to the second half of *My Funny Valentine*. Be ready for everything from sixteenth notes to whole notes. Remember that sixteenth notes come four to a beat.

If you have trouble, let the Miracle demonstrate the rhythm for you. Return to the Chalkboard, go to the Options Menu, and select *Listen to the Piece*.

33.08 II - LEFT HAND NOTES - Pitch practice for the bass line of the second half of *My Funny Valentine*. Be ready for some tricky hand position jumps around the fourth and fifth screens.

33.09 II - LEFT HAND IN RHYTHM - You'll play the bass line for part two of *My Funny Valentine* with the metronome turned on. Concentrate on the rhythm. If you have problems, review Lesson 33.07.

33.10 II - RIGHT HAND - Pitch practice for the melody of the second half of *My Funny Valentine*. The two note chords on the last two screens are especially tricky. Work on them slowy at first, until you have them under your fingers.

33.11 II - RIGHT IN RHYTHM - You'll play the melody for part two of *My Funny Valentine* with the metronome turned on. Double check your fingering and the rhythms of the double notes at the end of the piece.

33.12 II - TWO HAND RHYTHM - You'll tap out both the bass line and melody of *My Funny Valentine*. You'll notice that each new screen appears *before* you finish playing the last measure of the previous screen. This is to help you boost your ability to read ahead.

33.13 II - ALL THE NOTES - You'll play the bass line and melody for part two of *My Funny Valentine* with the metronome turned off. Pay extra attention to measure boundaries and previous accidentals. There are a few instances where the previous accidental rule affects bass line notes that occur between screen flips.

33.14 PART II IN TIME - You'll play the second half of *My Funny Valentine* with the metronome turned on.

33.15 MY FUNNY VALENTINE - A solo performance of *My Funny Valentine* in it's entirety. Because it's a long piece, take special care to keep the tempo steady.

Section 34
Star Wars

What You'll Discover

Section 34 contains eight Lessons. In these Lessons, you'll learn:

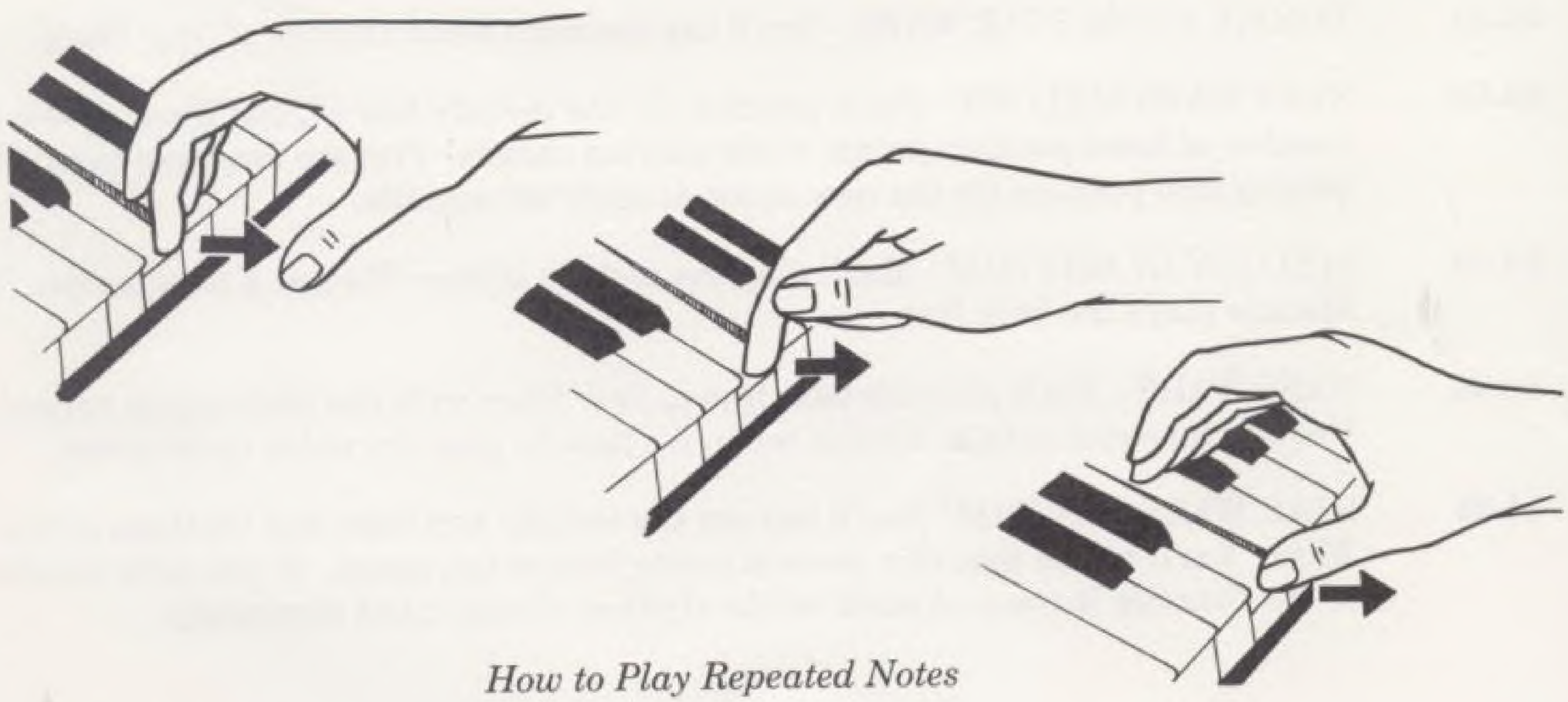
- How to play *Repeated Notes*
- What *Compound Time Signatures* are
- How to play the theme from *Star Wars*

Repeated Notes

Sometimes a piece requires you to repeat the same note several times quickly. This can give a finger a real workout when repeating short duration notes at a fast tempo.

The best way to play such notes is with your thumb, moving as fast as you can. There are times, however, when this is not possible.

An alternate way to play repeated notes is to use your thumb, index, and middle finger in a special way. Keep these three fingers curved inward in the normal ready position, but position the tip of your middle finger on the very outer edge of the key. Play the note with your middle finger, while drawing it off the keyboard. As it slips off, play the note again with your index finger, while drawing it off the keyboard. As your index finger slips off, play the note with your thumb.



How to Play Repeated Notes

Compound Time Signatures

Compound Time Signatures are time signatures in which the number of beats per measure can be evenly divided by 3. For example, 6/8 time is a compound time signature.

Compound time signatures are often very hard to count in the normal way. Imagine trying to keep up "1-2-3-4-5-6" rapidly for hundreds of measures.

When playing in compound time signatures, it is much easier to divide each measure into groups of three. 6/8 time would then have two beats (of three eighth notes each) per measure. Count "1-2" and play three notes per beat.

The Star Wars Theme

In this Section, you'll play the main theme from the 1977 movie *Star Wars*. This theme contains repeated notes and is played in a compound time signature, 6/8 time.

All of the music from *Star Wars* was written by composer John Williams, who also wrote the scores to *Jaws*, *Raiders of the Lost Ark*, *E.T.* and dozens of others.

Music is extremely important in setting the mood of a film. Test audiences who saw *Star Wars* without the Williams score gave all indication that the film would be a flop. Once the score was added, test audiences raved. Upon release, *Star Wars* became the biggest money-maker of its time.

Section 34 - The Lessons

34.01 THEME FROM STAR WARS - You'll tap the right hand rhythm of *Star Wars*.

34.02 STAR WARS MELODY - Pitch practice for the melody line of *Star Wars*. You'll find a number of hand position jumps while playing chords. Prepare for these carefully by getting into position for the new chord as early as possible.

34.03 MELODY IN RHYTHM - You'll play the melody of *Star Wars* at a slow tempo. The Miracle plays the bass line.

34.04 BASS WARS - You'll play the bass line to *Star Wars* with the metronome turned on. Use the repeated note technique when it's time to play the notes up to speed.

34.05 STAR WARS RHYTHM - You'll tap out the melody and bass line rhythms of *Star Wars*. You'll notice that this piece is pretty fast at full speed. If you have trouble, go to the Practice Room and work on the rhythm of each hand separately.

34.06 STAR WARS NOTES - You'll play both the melody and bass line of *Star Wars* with the metronome turned off. You'll notice that the left hand takes over the melody in the middle of the piece. Concentrate on the left hand during this passage.

34.07 USE THE FORCE, LUKE! - You'll play *Star Wars* at a variety of tempos from very slow to full speed.

34.08 ORCHESTRA WARS - The Miracle accompanies you in a final performance of *Star Wars*. May force be with you!

Section 35
La Bamba

What You'll Discover

Section 35 contains ten Lessons. In these Lessons, you'll learn:

- How to play *La Bamba*

This Section presents a piece to sharpen the skills that you already have. Make sure you can play the music from all of the previous Lessons. If you have trouble, visit the Practice Room.

La Bamba

In this Section, you'll play a Latin-style Rock tune called *La Bamba*. This piece will challenge you with a little bit of everything you've learned so far. Expect to practice for a couple of weeks before you can play it smoothly.

La Bamba was made famous in the mid-fifties when Ritchie Valens adapted a latino folk dance into his own Rock style. It was released as the "B" (considered less important) side of a Valens single. The "A" side was a song called *Donna*, which has faded into obscurity.

Ritchie Valens

Valens was born Richard Valenzuela in the Los Angeles suburb of Pacoima in May of 1942. As a teenager, he toured the country, playing alongside other popular early rockers such as the Big Bopper and Buddy Holly.

Following such a concert on a snowy night in Clearlake, Iowa, Holly announced that he was tired of bus travel. Instead, he chartered a four-seater plane to take him, the Big Bopper, and one other to the next city on their tour. The 17-year-old Valens, excited by the prospect of his first plane flight, spoke up for the extra seat. So did Holly's guitarist, Tommy Allsup. The decision was made by the flip of a brand-new half dollar coin. Valens called "heads" and won the seat...but lost his life.

The plane crashed moments after take off. All three were killed, but their music still keeps their memory alive.

Section 35 - The Lessons

35.01 LA BAMBA - Listen for the syncopation as the Miracle demonstrates *La Bamba*. It starts in the first measure of the second screen, with a dotted quarter note next to an eighth note. This syncopated rhythm repeats throughout the piece.

35.02 EL ROBO HOMBRE - Roboman returns to help you practice the rhythm of the *La Bamba* melody line. Remember to hold down for the full length of the dotted notes, and to lift your fingers during the rests. If you have trouble, try playing by using the rhythms displayed at the bottom of the screen.

35.03 LEFT HAND RHYTHM - You'll tap out the bass line of *La Bamba*. If the syncopated rhythms give you trouble, try selecting *Listen to the Piece* from the Chalkboard's Options Menu.

35.04 LEFT HAND NOTES - Pitch practice for the bass line of *La Bamba*.

35.05 RIGHT HAND NOTES - Pitch practice for the melody of *La Bamba*. You'll notice that the melody is very repetitive, and keeps jumping back and forth between the Middle C octave and the one above it.

35.06 LA RIGHT RHYTHM - You'll play the melody of *La Bamba* with the metronome turned on. The last few screens have some tricky syncopation. Try to play the syncopated notes directly between the beats.

35.07 TAPPING BOTH HANDS - You'll tap out both the melody and bass line to *La Bamba*. The syncopation makes this piece a challenging one to tap. You'll know if you get out of sync because the melody will sound peculiar.

35.08 ALL LA NOTES - Two-handed pitch practice on *La Bamba*. There is some very tricky fingering, so pay extra attention. Work on this Lesson until you can play the notes without having to think about them.

35.09 LA BAMBA SLOWLY - You'll play *La Bamba* at several speeds, beginning with a very slow tempo. Make use of the time provided by the rests to move to new hand positions.

35.10 LA BAMBA CON SPICE - The Miracle adds a spicy accompaniment for your final performance of *La Bamba*.

Section 36
The Final Challenge

What You'll Discover

Section 36 contains twelve Lessons. In these Lessons, you'll learn:

- How to read *Sixteenth Note Rests*
- How to play the *Habanera* from the opera *Carmen*

This is the final Section of the Miracle course. It presents the most challenging piece yet. Make sure you can already play the music from all of the previous Lessons. If you have trouble, visit the Practice Room.

Sixteenth Note Rests

A *Sixteenth Note Rest* (also called a *Sixteenth Rest*) is a moment of silence that lasts for the same duration as a sixteenth note.

Sixteenth Rest

The Habanera

The *Habanera* is a dance with words. This style is considered uniquely Cuban, although it actually originated in Africa. Although not well known today, during the mid-1800's the Habanera was considered to be the most popular dance in the New World. The closest modern dance equivalent is the Tango.

Many composers have written Habaneras, each with their own unique rhythmic pattern. All Habaneras, however, are written in 2/4 time.

In this Section, you'll play the Habanera from *Carmen*.

Carmen

The opera *Carmen* opened in 1875 to poor attendance and disappointing reviews. It was the final work of French composer Georges Bizet, who died the same year at age 37.

Some historians suggest that *Carmen's* poor reception may have played a role in Bizet's early demise. If so, it is both sad and ironic. The opera became a smash success shortly after Bizet's death.

The Habanera is the most famous piece from *Carmen*. It is performed in the first act by the title character, who is a bodacious gypsy woman.

Oddly enough, *The Habanera* is the one part of *Carmen* that Bizet didn't write. With minor alterations, Bizet used the melody from a work of one of his contemporaries, mistakenly believing it to be a traditional folk song. In actuality, it was written only a few decades earlier by Spanish Composer Sebastian Yradier, and was entitled *El Arreglito* (*The Little Arrangement*).

Section 36 - The Lessons

36.01 YOU'VE COME A LONG WAY - Listen while the Miracle demonstrates *The Habanera*. Pay particular attention to the rhythmic pattern that appears in the third measure of the melody.

36.02 CARMEN: HABANERA - You'll tap out the left-hand part of *The Habanera*. The bass line has a dotted ostinato rhythm which continues throughout the piece.

36.03 LEFT HAND NOTES - Pitch practice for the left-hand part of *The Habanera*. Some of the stretches are so long that twisting your wrist is unavoidable. When doing this, try to keep your arm and wrist flexible as it follows the hand from the low to the high notes and back down again.

36.04 LEFT HAND IN RHYTHM - You'll play the left-hand part of *The Habanera* with the metronome turned on. Try to play as Legato (connected) as possible. If you have small hands, try playing the 2nd note of each measure a little shorter and *jumping* to the upper note.

This Lesson is an excellent warm-up exercise to develop the strength you will need to play even more advanced pieces in the future.

36.05 POP QUIZ! - Flashcards quiz you about dotted notes.

36.06 RIGHT HAND RHYTHM - You'll tap out the right-hand part of *The Hab..nera*. Notice that the piece is filled with four measure rhythmic patterns that repeat over and over again. Concentrate on learning this pattern and the rest will be easy.

36.07 RIGHT HAND NOTES - Pitch practice for the right-hand part of *The Habanera*. Be ready for the double note chords on the last few screens. Give these extra attention so that you'll be prepared when you add your left hand.

36.08 RIGHT HAND IN TIME - You'll play the right-hand part of *The Habanera* with the metronome turned on. This lesson should give your skills a challenge. If you have trouble, work on the fingering in the Practice Room until you can play it every time without mistakes.

36.09 TWO HANDS IN RHYTHM - You'll tap out the rhythm of *The Habanera* with both hands. You'll discover that those Latin pianists keep their hands busy! Be ready for the sixteenth notes in the fifth measure.

If you have trouble, freeze the screen by pressing the "START" button on your NES Controller, so you can work on the tricky spots with the metronome turned off. The keyboard won't make any sound so you'll have to *feel* the rhythm.

36.10 CARMEN PRACTICE - You'll play *The Habanera* with the metronome turned off. Take as much time as you need going over the notes. Don't move ahead until you are absolutely sure of the fingering.

36.11 CARMEN SLOWLY - You'll play *The Habanera* at various tempos with the metronome turned on. Be especially patient at the slower tempos. Because you've heard the piece at faster speeds, there is a natural tendency to speed up.

36.12 STANDING ROOM ONLY - Your final performance of the Miracle Piano Teaching System course. The Miracle provides accompaniment as you play *The Habanera*. Try to stay loose as you play those large stretches in the left hand.

Where to Go From Here

Congratulations! You've finished the Miracle Piano Teaching System course and have mastered the basics of an exciting skill. You have every reason to be proud!

You now know how to:

- Recognize the most commonly found symbols used in piano sheet music.
- Read and learn to play the notes, rhythms and fingerings of a piece.
- Break pieces into smaller sections and separate components (pitch and rhythm).
- Coordinate your hands to handle changing hand positions, chords and types of articulation (such as staccato and legato).
- Blend notes using the damper pedal.

It's time to continue your training by learning pieces on your own. Select pieces that interest you and try to practice daily. Your skills in both playing and sight reading will continue to improve.

Practice the way you did with the Miracle System, 45 minutes to an hour each day. Don't forget that playing for even a few minutes is better than not playing at all.

Selecting New Pieces

Visit your local music store and browse through the sheet music section. Let your preference in music determine what to choose. As a guideline, select pieces that do not contain unfamiliar notation (symbols you've not seen). At first, avoid taking on pieces with extremely intricate passages containing lots of sixteenth and thirty-second notes.

Consider trying some of the following:

General

- Scott Joplin piano rags
- Spiritual and Gospel arrangments

Contemporary

- Folk music collections
- Movie soundtracks
- Popular songs
- Rock collections such as Beatles, Elton John and Billy Joel
- Beginning Jazz collections

Classical

- Bach's *2-Part Inventions*
- Bartok's *Mikrocosmos*
- Schumann's *Kinderscenen*
- Some sonatas and sonatinas by Clementi, Haydn and Mozart

Getting Further Instruction

In addition to practice, the best way to further your studies is by taking piano lessons and/or music theory lessons. These are available through both group classes and private instruction.

Group Piano Lessons:

Group lessons are frequently offered through Parks & Recreation departments, community programs, adult education programs, and junior (community), state and private colleges. They are an excellent way to follow-up on the concepts you've learned from the Miracle course.

Course prices vary depending upon who offers the program that interests you. They range from very inexpensive to several hundred dollars.

Private Piano Lessons:

For the student who wants to excel, there is no substitute for a good, qualified piano teacher. He or she can improve your playing in many areas beyond those taught in the Miracle course, such as technique, phrasing, dynamics, touch, rubato, variance in musical style and interpretation. You'll learn to play more difficult pieces, and pieces in different styles.

Many also include theory lessons as part of the training program.

Recitals, competitions and other performing opportunities are also part of a good teaching program and can greatly enhance your musical progress. There is little that is more fun and exciting than playing in public, and through a good piano teacher, you'll get that chance.

Good teachers are usually found by word-of-mouth. The best place to start looking is by contacting the music department in a nearby college or University. Most maintain a list of respected and qualified music teachers in the area.

Lesson prices range from about $30-$50 an hour. Some instructors offer half-hour lessons.

Theory Classes

Music theory teaches you the underlying concepts behind music and how it is put together. Among other things, you'll learn about the formation of chords and chord progressions.

Rock and Jazz musicians find this knowledge particularly useful because they must frequently *improvise* as they play. Classical pianists will find knowledge of theory helpful in learning to recognize patterns in complex pieces. This helps improve your sight-reading, interpretation and memory skills.

Anyone interested in composing music will find theory invaluable.

Theory classes, like group piano lessons, are frequently offered through community programs, adult education programs, and junior (community), state and private colleges. Prices vary.

If You're Interested in Playing Jazz

Jazz and improvisation is an art form that is best learned from a private instructor. Again, your local college is a good contact for suggestions on where to find a qualified instructor.

Also, those interested in Jazz will find a strong emphasis on music theory invaluable.

If You're Interested in Playing Rock

Keyboardists are often sought by Rock bands. Your best course of training would be to learn about Blues, Jazz, and improvisation. Don't hesitate to make up stuff you like and play it. Listen to other Rock keyboardists to get ideas for a place to start. You'll discover many different styles of playing. Pick ones you like while you develop your own.

Playing With Friends

Whatever you decide to play and however you decide to play it, one of the most enjoyable ways you can learn more and take advantage of your new skill is to play music with others. You will find a wide range of classical material available for piano and one or two other instruments, as well as a rich standard repertoire for jazz and rock bands.

Playing in a group will increase your confidence, improve your sight reading, fortify your rhythm skills and introduce you to challenges and material that you might not find on your own. Further, you'll find that an upcoming session with your friends makes practice more exciting and rewarding than ever.

Listening to Music

The single best thing you can do to develop as a musician is to listen to a lot of music. Choose music that you like, but pay special attention to pieces in which piano is featured.

If possible, try to listen to different performances of the same piece by both the same, and by different artists. You'll notice that slight differences in tempo, pacing and style can make one performance exciting and another dull or lifeless.

Here are some artists you may want to consider:

Rock

The Doors
Joe Jackson
Billy Joel
Elton John
Jerry Lee Lewis
Talking Heads

Jazz

Bill Evans
Oscar Peterson
Art Tatum
Teddy Wilson
Claude Bolling
Andre Previn

Classical

Concertos or Solo Work by:

Bach
Beethoven
Brahms
Chopin
Debussy
Gershwin
Liszt
Mozart
Prokofieff
Rachmaninoff
Ravel
Scarlatti
Schumann
Tchaikovsky

Friends and record store employees might also be able to offer suggestions.

History of the Piano

In the Pidgin trading language of New Guinea, the concept of a piano is described as "a box of music with teeth like a crocodile, suppose you fight it hard, it cries out." Although this definition captures little of the subtlety of today's piano, it accurately describes the piano's earliest ancestor.

This ancestor is the organ, which was invented in the 3rd century B.C. by the Greek engineer Ktesibios. His instrument, which he named the *Hydraulos*, was the first keyboard instrument. The "keys" resembled tongues of wood, and worked like hydraulic pumps. When a key was pressed, water pressure forced air though pipes to make a sound. Of course, to fight the water pressure, Hydraulos players would have to pound the keys with their fists.

Organs with far easier actions appeared around the sixth century, and quickly became the favorite instrument of the church. They are still popular there today.

The first keyboard instrument to use strings, rather than pipes, was the *Clavichord*. It was invented at some time during the Middle Ages, and became popular in the 1400's. The Clavichord contained brass strings that vibrated when a flattened brass pin was moved by the press of a key. Volume was controlled by the amount of pressure applied to the key. At its loudest, however, the Clavichord was as quiet as a mouse.

This made the clavichord ideal for home practice. It also made it the instrument of choice in nunneries. Nuns loved it, because they could play without disturbing those around them.

An Italian, Giovanni Spinnetti, was less impressed. He wanted a more powerful instrument, capable of producing louder sounds. With the advent of the modern power amplifier still some 450 years away, Spinnetti could only increase the volume by making an instrument with longer strings and a longer soundboard. In addition, his instrument, the *Harpsichord*, firmly plucked the strings with quills when keys were pressed. This created the loud sound that Spinnetti desired, although there was no way to quiet it down!

Cembalo, 1599, by H. Ruckers, Antwerpen

It was during the 16th century that orchestras began to appear, and the harpsichord became a standard instrument in such ensembles. Performances by these early orchestras were either private affairs for royalty, or held in association with a new musical form called opera.

Although the popularity of keyboard music began to flourish, few people owned keyboards. This was mostly due to the fact that harpsichords and clavichords were complicated, hand-made instruments, and so were quite expensive. Royalty and wealthy professionals displayed them proudly, but they were rarely seen elsewhere. Music was an art for the rich.

In fact, public performances by individual musicians were practically unheard of until 1672. It was in that year that English violinist John Bannister realized that there was a profit to be made from them. At 4 o'clock every afternoon, Bannister would charge "a shilling a head" for anyone interested in coming to his house to listen to the best musicians he could scrape up.

Keyboardists introduced themselves to the public in 1678 when another Englishman, Thomas Britton, rose to fame by holding concerts in the loft above his coal store. Handel (best known today for his *Messiah*) was among the many who performed on the harpsichord in Britton's well-heated loft. It was said of these lofty performances, "anybody that is willing to take a hearty Sweat may have the Pleasure of hearing many notable performers in the cheering Science of Musick."

By the early 1700's, public performances were common, and the volume put out by the harpsichord made it the logical keyboard instrument to play. This frustrated many composers, who felt that subtle variations in volume were necessary in the expression of their music, beyond the capabilities of the harpsichord. The highly opinionated Johann Sebastian Bach publicly called the harpsichord a "soulless instrument."

What the world needed was an instrument that combined the volume of the harpsichord with the expressiveness of the clavichord.

In 1709, the piano was born. It was called the *Gravicembalo Col Piano E Forte* (Harpsichord with Loud and Soft) and was invented by Italian harpsichord designer Bartolommeo Cristofori.

The *Pianoforte*, as it became known, used a system of hammers and dampers to control the strings. When a key was pressed, a small wooden hammer was thrown up against a string, causing it to vibrate. If the key was struck hard, the hammer also struck hard, creating a loud note. If the key was struck softly, the force of the hammer was lessened, creating a quieter sound. When the key was released, a damper fell upon the string, silencing it. This is essentially how pianos work today.

Cristofori was excited about his invention. Unfortunately, no one else seemed to be. Despite the piano's advantages, the harpsichord continued to dominate the musical world.

A German organ maker, however, was intrigued by Cristofori's hammer action design. In 1725, Gottfried Silbermann began copying Cristofori's piano and promoting it throughout Germany. Though excited by the instrument, he too found himself fighting an uphill battle to get it recognition.

In 1736, Silbermann thought to promote the design by introducing his piano to one of the harpsichord's harshest critics, the great Johann Sebastian Bach. Silbermann's expectations were high as Bach played the instrument and gave it serious consideration.

The famous composer agreed that the piano had a pleasant tone, but declared that the treble was too weak and the action too stiff. This infuriated Silbermann, who refused to speak to Bach for many years.

Ironically, Silbermann ended up improving the instrument in exactly the areas that Bach criticized. By 1747, eleven years after he was introduced to it, Bach agreed that the piano was "coming along.

Kirk Nurock's "Sonata for Piano and Dog," a work in four movements, Carnegie Hall, 1983

However, the first public concert featuring a piano was not held until 1767, fully 58 years after the instrument's invention. An advertisement promoted the concert as a benefit held by a "Miss Brickler," who sang while accompanied "on a *new* instrument call'd a Piano Forte."

The piano was well received at the Brickler concert, but it was a performance in the following year by Johann Christian Bach (the youngest son of Johann Sebastian Bach) that finally brought the instrument public acceptance. Suddenly pianos of numerous designs appeared all over Europe, and even in the New World. Future American president Thomas Jefferson, an extraordinary violinist and passionate music lover, bought a piano in 1771.

At this time, the largest manufacturers of pianos were the French, led by Sebastien Erard, and the English, led by John Broadwood. French pianos were known for their crisp, delicate touch while the English pianos were known for their fullness of sound. The virtues of each were a topic of many arguments among composers in the late 1700's.

Piano on which Mozart played in Prague, 1787

The first American piano factory opened in Philadelphia in 1774, manufacturing instruments that favored the English design.

Around that same time, the exploits of an extraordinary keyboard performer was spreading across Europe. He was a child prodigy of exceptional talent by the name of Wolfgang Amadeus Mozart. When the child began composing music at age four, his father realized that there was money to be made. By age six, Wolfgang was paraded past the royalty of Europe, leaving them stunned by his performances.

At age fourteen, Mozart was so skilled that at a *single* exhibition, he was challenged to play "a Symphony of his own composition; a harpsichord concerto which will be handed to him, and which he will immediately play *prima vista* (on first look); a Sonata handed to him in like manner, which he will provide with variations, and afterwards, repeat in another key; an Aria, the words for which will be handed to him, and which he will immediately set to music and sing himself, accompanying himself on the

harpsichord; a Sonata for harpsichord on a subject given to him by the leader of the violins; a Strict Fugue on a theme to be selected, which he will improvise on the harpsichord; a Trio, in which he will execute a violin part *all' improvviso* (improvised); and finally, the latest Symphony composed by himself." Mozart met the challenge easily and the concert was a complete success.

Mozart was another composer who quickly tired of the limitations of the harpsichord. Unlike Bach, however, he readily embraced the piano, legitimizing its use as a serious professional instrument.

With the piano's endorsement by Mozart and his contemporaries, piano teachers soon found themselves in high demand. By 1779 in Vienna, over 300 piano teachers were making a comfortable living.

In 1787, a 31-year-old Mozart was present at a performance by a young prodigy, the somber, but brilliant Ludwig van Beethoven.

Mozart was never easily impressed. He correctly believed that few, if any composers were even close to being his equal. Of the 17-year-old Beethoven, however, he claimed "This young man will leave his mark on the world."

Not everyone agreed with Mozart. Seven years later, when Beethoven studied the art of counterpoint with Johann Georg Albrechtsberger, the famous Viennese instructor insisted that Beethoven "has learned nothing, and will never do anything properly."

Albrechtsberger's frustration rose from the fact that Beethoven's active imagination would distract him from the dry, traditional course of study. This imagination, however, was Beethoven's greatest strength, and it is what marks him as one of the greatest composers in the world. To him, music was merely a puzzle to be worked out. His imaginative solutions yielded works of great

Early performance of the London Quadrophonic Society

power and expression, often built from seemingly lackluster themes. In fact, Beethoven's performances were so powerful that he was forever hiring musicians to run around the piano and remove the strings and hammers that he broke.

Then again, Beethoven's performances had to be powerful. Concert halls were growing larger and larger, quickly exceeding the carrying power of 18th century pianos. Although manufacturers knew that they could increase the piano's volume by using thicker strings, the sixteen ton tension required to tune such strings would snap a wooden piano frame like a twig.

A Bostonian, Alpheus Babcock, solved the problem in 1830 by making a piano frame out of cast iron. Within a few decades, his design revolutionized the industry. A variation of Babcock's cast iron design is still standard in today's pianos, in which the thicker contemporary strings require tensions of over thirty tons.

Babcock's design contributed to the rise of pianists such as Anton Rubinstein, a Russian who was known for thunderous performances. In Europe, most critics wondered what all the fuss was about, since Rubinstein often played sloppily, botching notes during his energetic recitals. Audiences, however, thrived on the energy Rubinstein put into his performances, and left his concerts feeling well entertained. Today Rubinstein is remembered as the founder of the so-called *Russian School* of piano playing, which emphasizes such fiery performances and virtuosity.

An even more intriguing performer was Franz Liszt, whose handsome features, unrivaled skill and dramatic playing style evoked the same response from the women of his day that the Beatles evoked from their fans in the 1960's. Women would charge the stage, throwing jewels and shrieking in ecstasy. A fight would invariably break out over possession of the green gloves that Liszt would leave on stage after the performance. One woman is said to have fished through trash for the stub of a cigar that Liszt had smoked, and then carried the stub in her bosom until the day she died.

Liszt was considered the greatest and most popular pianist in Europe, but another composer, Frederic Chopin, had a far greater impact.

Chopin was a small, foppish man to whom social circles and proper fashion meant everything. Although lacking Liszt's personal magnetism, he still amazed audiences by playing with a grace and agility that seemed impossible to achieve with his tiny, delicate hands. Today, Chopin is best remembered as the pioneer of an entirely new style of music, called Romanticism. This form, which is still popular today, concentrated on the emotional aspect of music instead of the technical, and often abandoned the rigid forms imposed by the earlier composers.

As music changed, so did the piano. In 1836, German cabinet maker Heinrich Steinweg built a piano in his kitchen which combined Babcock's cast iron frame with the recent English notion of pedals, and the hammer action improvements made by the French. It was the first modern piano, and the birth of the piano's most prestigious manufacturer, Steinway & Sons.

In 1853, Steinweg moved his business and his family to New York, where it remains today. By this time, piano playing had caught like wildfire, and the instruments could be seen everywhere. They were even common in the rugged American west, where piano players made their way into dance halls, bar rooms and bordellos.

By 1870, there were over 7000 piano manufacturers in the United States alone, and production was increasing almost twice as fast as the population. Over the next twenty years, one out of every six Americans were somehow involved in the piano industry.

During this time, manufacturers began experimenting in earnest, making stranger and stranger variations on their designs. Inventors would stop at no length to appeal to the public's piano-driven obsession. Some of these pianos were round. Others were square or wing shaped. Still others stood upright. Some had keyboards on each side so that several pianists could play at once. The Janko piano's keyboard looked more like a typewriter than anything else. Emil J. Cost's contribution was the smallest working piano in the world, measuring ½" x 3⅜" x 6½" — about the size of a short paperback book!

Typical player piano ad

Perhaps the most unique of these inventive pianos was the one that required no pianist. The *player piano* could duplicate a performance by rolling a hole-punched sheet of cardboard past a line of air jets, one for each key. Each hole represented one note of the performance. When a hole passed a jet, the air shooting through it would fire the appropriate hammer at the piano's strings.

These player pianos could accurately record many aspects of a performance, including dynamics and pedal activity. As a result, surviving player piano rolls provide us with accurate recordings of performances that were played long before the advent of modern recording equipment.

A wide variety of music was available for player pianos, but the most popular of the day was a new style of playing called *Ragtime*, which stood for *ragged time*. Ragtime tunes, called *Piano Rags*, were highly syncopated pieces that favored fast tempos and a more staccato flow.

As a result of Ragtime, the piano's popularity increased more than ever. By the turn of the century, almost 365,000 pianos a year rolled out of the factories. The stranger designs had mostly disappeared, leaving pianos primarily in the form of either wing-shaped *Grands* or *Uprights*. The Grand piano produced far louder and superior sound, and so was used for concert performances. The Upright's smaller footprint, however, made it the piano of choice for the home.

The Upright was also the favorite of artists in another new style of music, Jazz. This uniquely American form found its roots in both Blues and Ragtime. Unlike these single instrument styles, however, Jazz was played by small bands, usually made up of a piano, a coronet, a trombone and a bass.

The thing that made early Jazz most unique, however, was that it was rarely written down. Few Jazz musicians could read music. Instead, these musicians depended on their skill, intuition and experience. The Jazz age heralded a return to the art of improvisation which, though applauded in Mozart's day, was frowned upon by the classical performers of the late 19th century, and is still uncommon in classical performances today.

The early 1950's saw the most unique addition to the piano since the cast iron frame. This addition, first made by the Wurlitzer Company, was electricity. With it, the era of the easily transportable piano had arrived.

In an electric piano, the hammers strike metal reeds or rods whose vibrations create electrical signals. These signals are then sent to an amplifier and a speaker which reproduces them as sound. The sound, however, is somewhat different from that of a traditional piano. As a result, the electric piano found a home in new, rather than classical forms of music.

While the electric piano was sparking some interest, a group of German inventors and composers were learning how to produce sounds by entirely electronic means. They used a device called an *oscillator*, which when coupled with a keyboard by Robert Moog in 1965, formed the first *synthesizer*.

It was using this Moog synthesizer that composer Walter Carlos created the 1969 album *Switched on Bach*. Bach's music lent itself magnificently to the unusual sounds of this new keyboard instrument. The result legitimized the synthesizer while introducing the works of the baroque period's greatest composer to a new generation.

Synthesizers have made enormous advances since the early Moogs. Although today's synthesizer can still make unique electronic sounds, it can also accurately reproduce the sound of many traditional instruments.

This is done by a process called *sampling*. The process starts by making a digital recording of notes played by a real instrument. Using computer technology, the sound is converted into a series of numbers, which can later be converted back to sound. This is the same process by which Compact Discs work.

In synthesizers, these numbers are stored in a computer chip rather than on a disc. When the keyboardist plays a note, the synthesizer converts the numbers for that note back into sound. The result is the exact sound of the instrument that was originally recorded.

By the early 1980's, computer technology was also being used to attach *sequencers* to electronic keyboards. These were devices that would digitally record performances, allow you to edit them or overlay additional musical sequences, and then play them back for you through the synthesizer. Unfortnately, each manufacturer's sequencer would work only with their own synthesizers.

In 1982, representatives of the top synthesizer manufacturers met to discuss this compatibility problem. The result was MIDI (Musical Instrument Digital Interface), which became the standard format for sending data between instruments and sequencers (or other instruments). MIDI turned out to be so versatile that it is also used to control stage lighting, special effects and video equipment. All manufacturers

The 1922 Operatic Marathon winners, after 51 hours of continuous song.

Japanese robot that plays organ and reads music through TV camera "eyes"

support the MIDI standard today. The Miracle keyboard supports MIDI too.

The combination of sampling and MIDI have changed the way many composers work. Making a recording no longer requires dozens of musicians, a studio, and a room full of recording equipment. A single composer with a sequencer and a keyboard can create the sound of everything from a rock band to an entire symphony orchestra. The composer does this by using the sythesizer to create one instrument sound at a time, and then sequencing all of the sounds together. In fact, most of today's movie soundtracks are created in exactly this manner.

MIDI keyboards are also a great boon to Rock musicians. A keyboardist can take the place of an entire wind, brass or string section, providing a range in instrumentation that was once impossible to create in a live Rock performance. In addition, some bands use sequencers to help them perform songs that normally require many more musicians.

Life before the Miracle

All of these things are done on synthesizers similar to the Miracle keyboard, which is capable of reproducing 128 different sampled stereo sounds. In the Miracle Piano Teaching System, you'll use it with a sample of an instrument that has a rich three hundred year tradition...the piano.

The Theory Behind the Miracle

The Miracle Piano Teaching System is the first computer program that teaches you how to read and play music on the piano. It does this by providing interesting activities and games that, step by step, build your knowledge and playing skills. If you've been through the Miracle course, you're familiar with how this works.

But what happens *inside* the Miracle Piano Teaching System? This chapter describes the inner workings of the Miracle software, and explains how the Miracle seems to "know so much" about piano playing.

Lessons and Sections

The Miracle teaches piano in small steps. These steps are called Lessons. The entire course consists of several hundred Lessons, broken down into 36 logical Sections. One Section, for example, introduces rhythm. Another Section introduces staff notation (how music is written).

These Sections are arranged to give you the basic skills first, and then to improve upon these skills while introducing more advanced concepts. When you successfully complete a Lesson, you go on to the next Lesson in that Section. When you complete the last Lesson in a Section, you go on to the next Section.

But what happens when you don't get through a Lesson the first time?

Human piano teachers watch you as you practice. If you don't get through one of their lessons properly, the teacher gives you special exercises to help you get over the problem.

The Miracle does the same thing. It *listens* to how you play, and then analyzes your performance. If you encountered problems, it too creates a special exercise to help you overcome those problems. Here, in rough outline, is how it works.

The Analysis Phase

The Miracle analyzes your playing both during the performance and afterward.

During your performance, the Miracle listens to make sure you are playing the right note or notes at approximately the right times. In some activities, the Miracle will indicate mistakes by placing a large blue "X" underneath each note you misplayed.

The Miracle also records your performance for later analysis. It keeps a record of which keys you press, when you press them, how hard you press them, and when you release them. The Miracle calls this data the AMS, or Actual MIDI Stream.

When you finish playing, the Miracle compares your AMS with its Ideal Music Stream (IMS). This is its recording of what the performance is supposed to sound like.

Choosing the Most Significant Error

When you play the piece incorrectly, it is not enough for the program to say: "Well, you played some notes wrong." The goal of an expert teaching system is to determine *why* you played the notes wrong, and then offer corrective measures.

The Miracle classifies each of your errors as one of 200 error types. These types are distilled into 41 main categories. Some examples of the main error categories are: ignoring an accidental mark, holding a note too long, playing the notes too fast, misunderstanding the previous accidental rule, ignoring a rest, not holding a dotted note long enough, firing the wrong finger, or striking the crack between two keys.

Because different Lessons concentrate on developing different skills, the Miracle pays particular attention to the error categories associated with those skills. For example, when evaluating a lesson that concentrates on rhythm, the Miracle is less picky about a few wrong notes than it is about bad rhythm.

The Miracle determines which categories are important by assigning an importance value or *weight* to each of the forty-one error categories for that Lesson. The more important the error, the higher the number.

Each category's weight is then multiplied by the percent of mistakes made in that category. This creates a *score* in each of the forty-one categories of errors.

Low scores mean you made few mistakes. If your scores are low enough, the Miracle gives you a passing grade and takes you to the next Lesson. Otherwise, the Miracle identifies your most significant error (the one with the highest score), and designs an exercise to help you overcome this problem.

Creating Exercises

Each of the forty-one error categories have a half-dozen or more exercises that can help you overcome a problem in that category. These exercises use the various Miracle Activities, such as ducks, Roboman, Rhythm Practice, and so on.

When the Miracle chooses an exercise, it first eliminates any exercise for the category that is not appropriate to the Lesson. For example, if you haven't learned how to play with both hands yet, it won't ask you to play with both hands.

From the remaining exercises, the Miracle then selects the one that uses the least recent Activity. For example, if you have a rhythm error, and it's been awhile since you've played Roboman, you'll get a Roboman exercise. In this way, you constantly work in a variety of Activities.

Oops Chalkboards

Once the exercise is selected, the Miracle creates a Chalkboard screen that tells you what your error was, and what exercise you'll do to work on it. It does this by combining two pieces of text: the first comes from a list of phrases associated with each error category, and it tells you what you did wrong; the second comes from a list of phrases associated with the activity, and it tells you what you're going to do to correct the problem. The two phrases are combined using common rules of English.

This explains why the Oops chalkboards have no section and lesson number on them. They are custom-made to match your error, so they don't come from any particular lesson.

After the Exercise

Your performance in the exercise is analyzed in much the same way as your performance in the Lesson. If you receive a passing grade, the Miracle returns you to the Lesson where you first had the problem. If you make many mistakes in the exercise, the Miracle creates another exercise to practice with.

As you work with these exercises, your skills gradually improve. Eventually, you will be able to get through the initial Lesson and move on to the next.

About The Keyboard

This chapter provides the following detailed information about the Miracle keyboard:

- How to Connect the Foot Pedal
- How to Connect the Earphones
- How to Connect the Miracle to a Stereo System
- How to Select Different Patches (Instrument Sounds)
- How to Split the Keyboard between two Patches
- How to Use the Miracle with MIDI

Connecting the Foot Pedal

The pedal that comes with the Miracle functions as a Damper pedal. Connect it by plugging it into the two-pin "Foot Pedal" jack on the back of the Miracle keyboard. It does not matter which side of the plug is up. The pedal should sit on the floor with the foam (squishy) side up.

Connecting the Earphones

The stereo earphones included with your Miracle bypass the Miracle's speakers when connected, so that you can practice without disturbing those around you.

Connect the earphones by plugging them into the "Head Phone" jack on the back of the Miracle keyboard.

Note: Metronome clicks come from your television speaker, and so are not affected by the use of earphones. To quiet the metronome, turn down the volume on the television itself.

Connecting the Miracle to a Stereo

The sound from the Miracle can be played through your stereo, enabling you to produce louder sound. This also enables you to record your performances, provided that you have a tape deck attached to your stereo.

To connect the Miracle to a stereo, you must first purchase two Male-to-Male RCA-type connection cables, one for each stereo channel. This is the same type of cable that connects your stereo receiver to your tape deck, CD player, or turntable. Some stores also sell a single *stereo* cable that combines two regular cables together. Such cables have two RCA-type plugs *on each end*. These work fine too, and you'll only have to buy one.

RCA-type cables can be purchased in any store that sells stereo or electronic equipment, and should only cost a few dollars.

Connect one cable between the "LT Audio Out" jack on the back of the Miracle keyboard and the "Left AUX" In jack on your receiver.

Connect the other cable between the "RT Audio Out" on the back of the Miracle keyboard and the "Right AUX" In jack on your receiver.

The speakers on the Miracle are not disabled when these cables are plugged in. Instead, the Miracle volume control will affect both the internal speakers and your stereo speakers.

Selecting Different Patches

Patches is the term that musicians use to refer to the different instrument sounds in a synthesizer. The Miracle contains 128 different patches. Six of these are the default sounds that are assigned to the left six buttons on the top of the keyboard. They are:

(Grand) Piano	Harpsichord	(Pipe) Organ
(Motor) Vibraphone	(Dyno-Rhodes) Electric Piano	Synthesizer (Pad 5)

To use those instruments, press the button for the instrument you want. The LED above the selected button will light up.

You can also select from nine other predefined groups of sounds, called *Presets*, or enter a special *Library Select Mode* from which you can select any single one of the Miracle's 128 patches.

To use either Presets or Library Select, first place the keyboard overlay over the buttons and lights on the top of the Miracle.

Selecting Presets

To select a group of Presets, first place the keyboard overlay over the buttons and lights on the top of the Miracle, then hold down the SELECT button on the Miracle keyboard and while holding it, press the SCROLL DOWN button. The light next to the first preset, *CLASSICAL*, will start to blink. The five patches in this preset can now be selected by pressing the MELODY 1, MELODY 2, ACCOMPANY, BASS, or PERCUSSION buttons.

To select a different preset, hold down SELECT and then SCROLL DOWN or SCROLL UP until the light flashes next to the group you want.

To return to the default preset, hold down SELECT and then SCROLL DOWN or SCROLL UP until none of the LED's flash.

The following preset groups are available:

PRESET	MELODY 1	MELODY 2	ACCOMPANY	BASS	PERCUSSION
Classical:	Clarinet	Oboe	Strings	Sfz Brass 1	Xylophone
Rock:	Fuzz Guitar	Stop Guitar	Pluck Synth	Stick Bass	Percussion 1
Jazz:	Saxophone	Vibraphone	Jazz Guitar	Fretless Bass	Percussion 3
Blues:	Harmonica	Organ	Steel Guitar	Electric Bass	Percussion 1
Rap:	Kalimba	Mod Synth	Clean Guitar	Moog	Effects 2
Latin:	Pan Flute	Marimba	Guitar	Upright Bass	Percussion 2
Country:	Banjo	Violin	12-String Guitar	Detuned Piano	Percussion 1
Cathedral:	Harp	Horns	Vox 3	Pipe Organ	Church Bells
New Age:	Harmonica	Tube Bells	Digital Waves	Fretless Bass	Log Drum

Library Select Mode

To enter Library Select Mode, first place the keyboard overlay over the buttons and lights on the top of the Miracle, then hold down the SELECT button on the Miracle keyboard and while holding it, press the SCROLL UP button.The light next to the words *LIBRARY SELECT* will start to blink, and the MELODY 1 light will be lit. Patch 0, *GRAND PIANO* is now selected.

Use the buttons on the keyboard to scroll through the list of patches as follows:

MELODY 1	Scrolls forward through the patches, one at a time.
BASS	Scrolls backwards through the patches, one at a time.
MELODY 2	Scrolls forward through the patches, jumping ten at a time.
PERCUSSION	Scrolls backward through the patches, jumping ten at a time.
ACCOMPANY	Jump to patch 64 (SYNTH BELLS).
SELECT	Jump to patch 0 (GRAND PIANO)

If you scroll past the ends of the list, you will wrap around to the other end of the list.

To exit Library Select Mode, hold down the SELECT button and press SCROLL DOWN.

Available Patches

The following patches are available though both Library Select Mode and MIDI control:

000 Grand Piano
001 Detuned Piano
002 FM Piano
003 Dyno
004 Harpsichord
005 Clavinet
006 Organ
007 Pipe Organ
008 Steel Guitar
009 12-String Guitar
010 Guitar
011 Banjo
012 Mandolin
013 Koto[1]
014 Jazz Guitar[1]
015 Clean Guitar[1]
016 Chorus Guitar
017 Fuzz Guitar
018 Stop Guitar
019 Harp[1]
020 Detuned Harp
021 Upright Bass[1]
022 Slap Bass[1]
023 Electric Bass[1]
024 Moog
025 Techno Bass
026 Digital Waves
027 Fretless Bass[1]
028 Stick Bass
029 Vibraphone
030 Motor Vibraphone
031 Xylophone
032 Marimba
033 Glockenspiel[1]
034 Kalimba[1]
035 Tube Bells
036 Steel Drums
037 Log Drums[1]
038 Strings 1
039 Pizzacato
040 Strings 2
041 Violin[1]
042 Trumpet[1]
043 Trumpets
044 Horn[1]
045 Horns
046 Trombone[1]
047 Trombones
048 Cup Mute Trumpet[1]
049 Sfz Brass 1
050 Sfz Brass 2
051 Saw Synth
052 Tuba[1]
053 Harmonica
054 Flute[1]
055 Pan Flute[1]
056 Calliope
057 Shakuhachi
058 Clarinet[1]
059 Oboe[1]
060 Bassoon[1]
061 Sax[1]
062 Church Bells
063 Big Bells
064 Synth Bells
065 Vox 1
066 Vox 2
067 Vox 3
068 Mod Synth
069 Pluck Synth
070 Hard Synth
071 Syntar
072 Effects 1[2]
073 Effects 2[2]
074 Percussion 1[2]
075 Percussion 2[2]
076 Percussion 3[2]
077 Sine Organ[1]
078 Organ[3]
079 Pipe Organ[3]
080 Harpsichord[3]
081 Synth Pad 1
082 Synth Pad 2
083 Synth Pad 3
084 Synth Pad 4
085 Synth Pad 5
086 Synth Pad 6
087 Synth Pad 7
088 Synth Pad 8
089 Synth Pad 9
090 Synth Pad 10
091 Synth Pad 11
092 Synth Pad 12
093 Synth Pad 13
094 Synth Pad 14
095 Synth Pad 15
096 Tube Bells[1]
097 Frogs / Ducks
098 Banjo[1]
099 Shakuhachi[1]
100 Piano[1]
101 Vibraphone[1]
102 FM Piano[1]
103 Clock Bells[1]
104 Harpsichord[1]
105 Clavinet[1]
106 Organ[1]
107 Pipe Organ[1]
108 Metal Guitar[1]
109 Stick[1]
110 Guitar[1]
111 Xylophone[1]
112 Marimba[1]
113 Syn Trombone[1]
114 Syn Trumpet[1]
115 Sfz Brass 1[1]
116 Sfz Brass 2[1]
117 Saw Synth[1]
118 Church Bells[1]
119 Marcato[1]
120 Marcato
121 Violin[1]
122 Strings 3
123 Synth Bells[1]
124 Techno Bass[1]
125 Mod Synth[1]
126 Pluck Synth[1]
127 Hard Synth[1]

[1] These programs are single voice, which allows the Miracle to play up to sixteen notes simultaneously. All other programs are dual voice, allowing up to eight notes to be played simultaneously.

[2] See the table on the next page for a list of these sounds.

[3] To be true to the nature of the sampled instrument, these patches do *not* respond to velocity.

Effects and Percussion Patches

The following table describes how the special effects and percussion sounds are mapped onto the keyboard. Each effects or percussion patch contains up to 9 different sounds, which can be played on 6 keys each. Each key of a particular sound will play at a different frequency (higher or lower), just like a normal instrument.

If you wish to play these sounds on the keyboard, select the patch that has the sound you want, then play the keys that correspond to that sound. For instance, to hear the keyboard play applause, select patch 73, then play keys starting at the second set of six (the first F-sharp through the first B on the keyboard).

	MIDI Note Numbers								
Patch	30–35	36–41	42–47	48–53	54–59	60–65	66–71	72–77	78–83
072 Effects 1	Jet	Gunshot	RoboDeath	Whoosh	Punch	Slap	Duck	Ow! 1	Ow! 2
073 Effects 2	Yes (ding)	No (buzz)	Applause	Dogbark	Door creak	Door slam	Boom	Car skid	Goose
074 Percussion 1		Kick Drum	Snare	Toms	Cymbal	Closed Hat	Open Hat	Ride	Shaker
075 Percussion2		Rim Shot	Exotic	Congas	Timbale	Cowbell	Bongos	Whistle	Clave
076 Percussion 3	Ratchet	Snap 1	Snap 2	Dripdrum 1	Dripdrum 2	Wet clink	Talk Drum	Agogo	Explosion

Note that the first key on the keyboard corresponds to MIDI note 36, so sounds that fall below that number are available only through MIDI.

Splitting the Keyboard

Splitting the keyboard means to assign one patch to the left half of the keyboard and a different patch to the right half. This can be done in all modes *except* Library Select Mode.

To split the keyboard:

Press and *hold* the button you want to assign to the keyboard's left side (everything to the left of Middle C). Now press the button you want to assign to the keyboard's right side (Middle C and everything to the right of it).

When you release the buttons, the indicator lights for both instruments stay lit, and the keyboard is now split.

Cancel the split by selecting any other patch.

Connecting the Miracle to a MIDI Device

The Miracle can be connected via MIDI (Musical Instrument Digital Interface) to a standalone or computer-driven sequencer that can digitally record your performances, as well as letting you edit, merge and play back these performances through the Miracle. Through MIDI, the Miracle can also be used as a keyboard input device for another synthesizer.

To connect the Miracle to a MIDI device, you must first purchase two MIDI cables. MIDI cables can be found in any store that specializes in electric and electronic instruments (such as guitar stores).

Connect one cable between the "MIDI IN" jack on the back of the Miracle keyboard and the "MIDI OUT" jack on your other MIDI device.

Connect the other cable between the "MIDI OUT" on the back of the Miracle keyboard and the "MIDI IN" jack on your other MIDI device.

MIDI Technical Data

The Miracle keyboard always sends MIDI information on MIDI Channel 1 and receives on MIDI channels 1 through 8. This allows for eight different patches to be played at one time.

The MIDI data understood by the Miracle keyboard is defined below.

MIDI DATA

Status		Number of data bytes	Description
HEX	BINARY		
9n	10010nnn	2	Note on/off
Bn	10110nnn	2	Control change
Cn	11000nnn	1	Program change
Fn	11110nnn	varies	SysEx commands

nnn = Midi Channel
i.e. 000 is Channel 1, 001 is Channel 2, and 111 is Channel 8

MIDI information sent FROM the Miracle keyboard:

NOTE ON COMMAND:

1) Note on command	(90h)
2) Key number	(24h through 54h)
3) Velocity	(01h through 7Fh)

NOTE OFF COMMAND:

1) Note on/off command	(90h)
2) Key number	(24h through 54h)
3) NOTE OFF	(00h)

PATCH CHANGE COMMAND:

1) Patch change	(C0h)
2) Patch number	(00h through 7Fh)

* Patch change is sent only in Library mode.

SUSTAIN OFF COMMAND:

1) Control change	(B0h)
2) Sustain Pedal	(40h)
3) SUSTAIN OFF	(00h — Pedal released [OFF])

SUSTAIN ON COMMAND:

1) Control change	(B0h)
2) Sustain Pedal	(40h)
3) SUSTAIN ON	(7Fh — Pedal pressed [ON])

MIRACLE BUTTON ACTION:

1) SysEx command	F0h, 00h, 00h, 42h, 01h, 01h, bb, F7h
bb = button on/off	
00 - Button 1 off	08 - Button 1 on
01 - Button 2 off	09 - Button 2 on
02 - Button 3 off	0A - Button 3 on
03 - Button 4 off	0B - Button 4 on
04 - Button 5 off	0C - Button 5 on
05 - Button 6 off	0D - Button 6 on
06 - Volume – button off	0E - Volume – button on
07 - Volume + button off	0F - Volume + button on

KEYBOARD BUFFER OVERFLOW ERROR:

1) SysEx command	F0h, 00h, 00h, 42h, 01h, 03h, 01h, F7h

MIDI BUFFER OVERFLOW ERROR:

1) SysEx command	F0h, 00h, 00h, 42h, 01h, 03h, 02h, F7h

MIRACLE FIRMWARE VERSION:

1) SysEx command	F0h, 00h, 00h, 42h, 01h, 05h, x, y, F7h
version = x.y	(from version 1.0 to 99.99)

MIDI information received by the Miracle

NOTE ON COMMAND:

1) Note on command	(90h through 97h)
2) Key number	(18h through 54h)
3) Velocity	(01h through 7Fh)

NOTE OFF COMMAND:

1) Note off command	(90h through 97h)
2) Key number	(18h through 54h)
3) NOTE OFF	(00h)

VOLUME LEVEL COMMAND:

1) Command change	(B0h)
2) Main volume	(07h)
3) Volume level	(00h [LOWEST] through 7Fh [FULL])

SUSTAIN PEDAL ON/OFF COMMANDS:

1) Command change	(B0h through B7h)
2) Sustain Pedal	(40h)
3) On or Off	(00h [OFF] or 7Fh [ON])

LOCAL CONTROL ON/OFF COMMANDS:

1) Command change	(B0h)
2) Local control	(7Ah)
3) On or Off	(00h [OFF] or 7Fh [ON])

ALL NOTES OFF COMMAND:

1) Command change	(B0h)
2) All notes off	(7Bh)
3) data	(00h)

MIRACLE FIRMWARE VERSION REQUEST:

1) SysEx command	F0h, 00h, 00h, 42h, 01h, 04h, F7h

PATCH SPLIT COMMAND:

1) SysEx command — F0h, 00h, 00h, 42h, 01h, 06h, mc, lp, up, F7h
mc = MIDI channel (0–7)
lp = lower patch number
up = upper patch number

Each MIDI channel may be split in the same fashion as a keyboard split. Thus two different patches may be combined on one MIDI channel. The lower patch is selected for notes 36 through 59. The upper patch is selected for notes 60 through 83.

ALL LEDs ON COMMAND:

1) SysEx command — F0h, 00h, 00h, 42h, 01h, 08h, F7h

LEDs TO NORMAL COMMAND:

1) SysEx command — F0h, 00h, 00h, 42h, 01h, 09h, F7h

The MIRACLE Piano Teaching System
MIDI Implementation Chart

Revision: H
Date: 10–1–90

Function		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 1	1–8 1–8	Up to 8 simultaneous channels may be received.
Mode	Default Messages Altered	* * * * *	3	
Note Number	True Voice	36–84	(24) 36–85	Some sounds respond to notes 24–35 thru MIDI/Miracle port.
Velocity	Note On Note Off	O X	O X	
After Touch	Keys Channel	X X	X X	
Pitch Bender		X	X	
Control Change	Volume Sustain Local on/off Notes off	7 X 64 O[1] 122 X 123 X	O[2] O O O	
Program Change	True Number	0–127	0–127	Program changes are only sent while in Library mode.
System Exclusive		O	O	See *System Exclusive Messages.*[3]
System Common	Song Position Song Select Tune Request	X X X	X X X	
System Real Time	Clock Commands	X X	X X	
Aux Messages	Local On/Off All Notes Off Active Sensing System Reset	X X X X	O O X O	

Notes:
[1]Sustain pedal is sent through MIDI on output channel only.
[2]Volume control is received on any/all MIDI input channels and changes overall instrument volume.
[3]Transmitted: front panel button pushes; Received: configurations, local button control off, keyboard split modes.

Mode 1: Omni ON, Poly
Mode 2: Omni OFF, Mono
Mode 3: Omni OFF, Poly
Mode 4: Omni OFF, Mono

O–Yes
X–No

Some Common Problems

Here are some commonly asked questions about the Miracle Keyboard and Piano Teaching System.

I don't hear anything when I press a key on the keyboard.

- Check that the earphones aren't connected. When headphones are attached, the speakers on the Miracle are turned off.
- Check the volume. Make sure that at least 3 or 4 volume LED's are lit up.
- Check the power supply. Make sure it's plugged into the wall, and make sure the other end hasn't slipped out of the back of the Miracle.
- Make sure the Miracle is turned on.

When I turn on my Nintendo, nothing happens.

- Check the Miracle cable. It must be plugged into NES controller port #1. The NES will malfunction if the Miracle is attached to controller port #2.
- Check the Miracle cartridge. Make sure it is fully inserted into the NES and pushed all the way down.
- Make sure your TV is turned on, and that the brightness is high enough so you see a picture.
- Check your NES connections to your TV. If you're not sure how things should be connected, look in the manual that came with your Nintendo.

I can't hear the metronome.

- Check the volume on your TV. The metronome sound comes out of the TV, not out of the Miracle keyboard, so your TV volume must be high enough for you to hear it.
- Check your NES. See if other games make noise. If they don't, make sure your NES is properly connected to your TV (see your NES manual).
- Make sure you're supposed to hear a metronome. Some activities, like the duck game or pitch practice, don't have a metronome sound.

I can't hear the metronome when I use the earphones.

- The metronome sound comes out of your TV, not out of the Miracle speakers and not out of the earphones. Make sure the TV volume is loud enough so you can hear the metronome while you are wearing your earphones.

I pushed the "Piano" button, but it doesn't sound like a piano.

- Look for a blinking volume LED. If you find one, the keyboard is in library mode, or in one of the preset modes. Hold down the SELECT button (on the lower right) and press the SCROLL DOWN button. Then try the Piano button again.
- The keyboard may be split (playing one sound for the notes below middle C and a different sound for the notes above). Press the Piano button again, by itself.

The pedal doesn't work.

- Make sure the foam side is facing up.
- Make sure the connector is fully inserted into the back of the Miracle.

The keyboard makes noise, but the program isn't responding to what I play.

- Make sure the Miracle cable is properly connected, both to the back of the Miracle and to NES controller port #1.
- See if the Miracle is demonstrating something for you. Look for the "DEMO" icon at the bottom of the screen. If so, wait for a lesson where you play.

The Miracle is hooked into my stereo, but sound still comes out of the Miracle speakers.

- Plugging your stereo into the RCA connectors on the back of your Miracle doesn't disable the Miracle speakers.

The Miracle is hooked into my stereo, but nothing comes out of my speakers.

- Make sure the Miracle volume is set high enough. The Miracle volume controls the volume that your stereo gets.
- Check the RCA connectors. Make sure each is plugged into the right place. For more information, see "Connecting the Miracle to a Stereo" in the chapter called "About the Keyboard."
- Make sure your stereo is switched to the source that the Miracle is hooked to (usually AUX).

I don't see much of a selection of pieces in the practice room.

- Select the second-to-last item on the screen and you'll see another screen of choices.

I see a little Italian guy running around the screen stomping things.

- Insert your Miracle cartridge and press Reset.

Glossary

Accidental	A note that appears in staff notation preceded by a sharp, flat or natural symbol.
Bar	*See* Measure.
Bar Line	The vertical line that separates measures in staff notation.
Baroque	A period of musical history which lasted from about 1600 through 1750. Notable composers of this period include Bach, Couperin, Handel, Pachelbel and Scarlatti.
Bass Clef	The symbol at the left edge of a staff that identifies it as a bass staff. Sometimes called an F-clef, because it indicates that the note on the fourth line of the staff is an F.
Bass Line	The notes played on the bass staff. In piano, these are played with the left hand.
Bass Staff	A staff that begins with a bass clef, whose note pitches are normally associated with the male voice and low-pitched instruments. On the piano, it is associated with the left half of the keyboard.
Beam	A thick line that connects the stems of two or more consecutive notes with durations lasting an eighth note or shorter. It is used to simplify notation and improve readability of rhythm information.
Beat	A short interval of time, used to keep rhythm. Each measure of a piece is made up of a fixed number of these beats. When using a metronome, one click is usually associated with one beat.
Broken Octaves	A musical pattern in which notes alternate back and forth between octaves. This pattern is normally found in the bass line.
Cembalo	Harpsichord.

Chord

Two or more keys pressed at the same time. Two-note chords are sometimes referred to as *Double Notes.* Chords are written as several note heads attached to one stem.

Clef

A symbol that appears at the left of each staff to indicate what notes the lines and spaces of the staff represent. Two types are used in piano notation: treble clef and bass clef.

Coda

The finale of either a piece or major section of a piece. Codas generally use a pattern of notes or rhythms different from the rest of the piece, in order to create an impression of finality.

Common Time

A time signature of four beats per measure, where each beat is the duration of a quarter note. Also called 4/4 time.

Compound Time Signature

Time signatures in which the number of beats per measure can be evenly divided by 3.

Contrapuntal

In counterpoint. The term refers to playing two or more entirely independent parts (melody line, bass line, etc.) at the same time.

Contrary Motion

A musical pattern in which notes of rising pitches appear on one staff while notes of lowering pitches appear on the other staff.

Damper

A felt-covered device that silences the vibration of a piano string when the corresponding key on the keyboard is released.

Damper Pedal

The right pedal on the piano. This pedal lifts all of the dampers, allowing the strings to vibrate freely, even after their corresponding keys are released. It is also called the *loud pedal.*

Dotted Note

A note that is played for one-and-a-half times it's normal duration.

Double-Note

A two-note chord.

Duration

The amount of time a note is played, in relation to the other notes.

Eighth Note A note whose duration is one eighth that of a whole note. It appears in staff notation as a solid circle attached to a stem with a flag.

Eighth Note Rest A rest whose duration is equal to that of an eighth note. Also called an *Eighth Rest.*

Finger Independence The ability to move each finger independently of the others.

Finger Number A number that appears near a note in staff notation to indicate which finger to use to play that note.

Fingering The coordination of hand positions to play the notes of a piece smoothly.

Flat A note one half-step lower than the indicated note.

Grand A type of piano, characterized by a wing-shaped design.

Half Note A note that is played for half of the duration of a whole note. In staff notation, it looks like hollowed-out circle with a stem.

Half Note Rest A rest that lasts for the same duration as a half note. It is also called a *Half Rest.*

Half Step The distance between two adjacent keys on the keyboard.

Hand Position A pattern of keys assigned to the fingers of the hand.

Imitative Piece A type of music in which one musician (or hand) plays a sequence of notes with a particular rhythmic pattern, and then the other musician (or hand) plays a sequence of equal length, using the same rhythmic pattern. In many cases, the sequences have identical melodies.

Improvisation The art of creating music without following a specific written or practiced routine.

Jazz
A form of music that developed in the United States in the early 1900's from elements of Blues and Ragtime. Its style is often characterized by long improvisational solos and extensive use of syncopation.

Key Signature
An indicator at the beginning of a staff that identifies which lines and spaces of the staff should be played sharp or flat.

Lead Beats
One measure's worth of beats, counted off before a piece starts for the purpose of setting tempo.

Ledger Lines
Short horizontal lines above or below the staff, attached to the stem of a note. Used to indicate the pitch of notes that fall outside the range of the staff.

Legato
A technique of playing in which notes appear to flow together smoothly.

Length
The duration of a note.

Loud Pedal
See Damper Pedal.

Measure
A group of notes, framed on the staff between vertical bars called bar lines. Each measure in a piece has the same number of beats. Normally, the first beat in a measure is accented. Also called a *Bar*.

Melody
The tune or theme of a piece. In piano scores, it generally appears on the treble staff.

Metronome
A device which makes evenly spaced tick sounds to help musicians maintain tempo.

Middle C
The musical note *C* that is closest to the center of the keyboard.

Natural
A note that is neither sharp nor flat.

Octave
The closest distance between two different notes with the same lettter name. Including accidentals, this is a range of twelve notes.

Oscillator An electronic wave form generator used in synthesizers to create sounds.

Ostinato Rhythm A rhythmic pattern that repeats continuously.

Parallel Motion A musical pattern in which notes on both staves rise and fall in pitch at the same times.

Piano A keyboard instrument that uses a system of hammers and dampers to control the vibration of strings.

Pianoforte The early name given to the piano (literally, "loud–soft").

Playing By Interval A technique for reading music in which distances between notes on the staff are associated with distances between keys on the keyboard.

Player Piano A type of piano invented in the late 19th century that required no performer.

Previous Accidental Rule A special case to the normal rules of staff notation. When an accidental appears in a measure, the accidental remains in effect for future occurances of that particular note, for the rest of the measure.

Quarter Note A note that is played for one quarter the duration of a whole note. In staff notation it appears as a solid black circle with a stem.

Quarter Note Rest A rest that lasts for the same duration as a quarter note. Also called a *Quarter Rest.*

Ragtime A style of piano music that first appeared in the late 1800's. Pieces are highly syncopated, favor fast tempos and a more staccato flow.

Rest A moment of silence in music.

Rhythm The relationship between faster and slower notes.

Romantacism School of composing and playing with emphasis on subjective interpretation, emotional qualities and freedom of form.

Russian School A style of piano begun by Russian composer Anton Rubinstein that emphasizes fiery performances and virtuosity.

Sequence A pattern of notes and rhythm that repeats three or more times with each repetition beginning one note higher or lower than the previous one.

Sharp The note one half step higher than the indicated note.

Sight Read To play a new piece without first studying or practicing it.

Sixteenth Note A note played for one sixteenth the duration of a whole note. In staff notation it appears as a solid black circle with a stem possessing two flags.

Sixteenth Note Rest A rest that has the same duration as a sixteenth note. Also called a *Sixteenth Rest.*

Soft Pedal The left pedal on the piano. When pressed, the piano puts out less volume.

Sostenuto *See* Sustain Pedal.

Soundboard The wooden surface over which the strings of a piano are stretched. The sound of the vibrating strings resonate off the soundboard.

Splayed-out Stretched.

Staccato A style of playing in which notes are crisp and separate.

Staff A set of five, evenly-spaced horizontal lines. Each *line* represents a different note. Each *space* between the lines also represent a note. The space above and below the staff can also represent notes; *see* Ledger Line.

Staff Notation The written form of music.

Stretches Hand positions that require stretching your fingers to reach the notes.

Sustain Pedal The middle pedal on a piano. This pedal sustains the sound of a note being played (and only that note) beyond the time when the finger is lifted from the key.

Syncopation A style of rhythm in which accented notes appear between beats, rather than on them.

Synthesizer A musical instrument, usually having a keyboard, that can electronically create a wide variety of sounds.

Tapping A method of learning rhythm in which the pianist plays a single note on the keyboard in time with the rhythm of a piece of music.

Tempo The overall speed that a piece is played.

Theme The main melody of a piece, and that for which the piece is known and recognized.

Third The distance between two lines or two spaces on the staff.

Thumb Under A fingering technique that involves moving the thumb to a key that rests under the fingers, before moving the fingers.

Tie A curved line that connects two or more notes of equal pitch. Such notes are played as a single note, lasting for the duration of all the tied notes combined.

Time Signature The numbers that appear at the left of the first measure of a piece, indicating the number of beats per measure (upper number) and the note duration to which a beat is equal (lower number).

Treble Clef

The symbol at the left edge of a staff that identifies it as a treble staff. Sometimes called a G-clef, because it indicates that the note on the second line of the staff is a G.

Treble Staff

A staff that begins with a treble clef, whose note pitches are normally associated with the female voice and high-pitched instruments. On the piano, it is associated with the right half of the keyboard.

Triplet

Three notes played in the same time it would normally take to play two. They appear in notation as a set of beamed notes with a small *3* above the beam.

Una Corda

See Soft Pedal.

Upright

A type of piano whose strings are mounted vertically, thus requiring little floor space.

Variation

A modified variation of a basic theme.

Whole Note

A note whose duration is four times that of a quarter note. The actual duration is determined by the tempo of the piece. These notes have the longest duration of any normal note in piano music. In staff notation, they appear as a hollow circle with no stem.

Whole Note Rest

A rest that has the same duration as a whole note. Also called a *Whole Rest*.

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